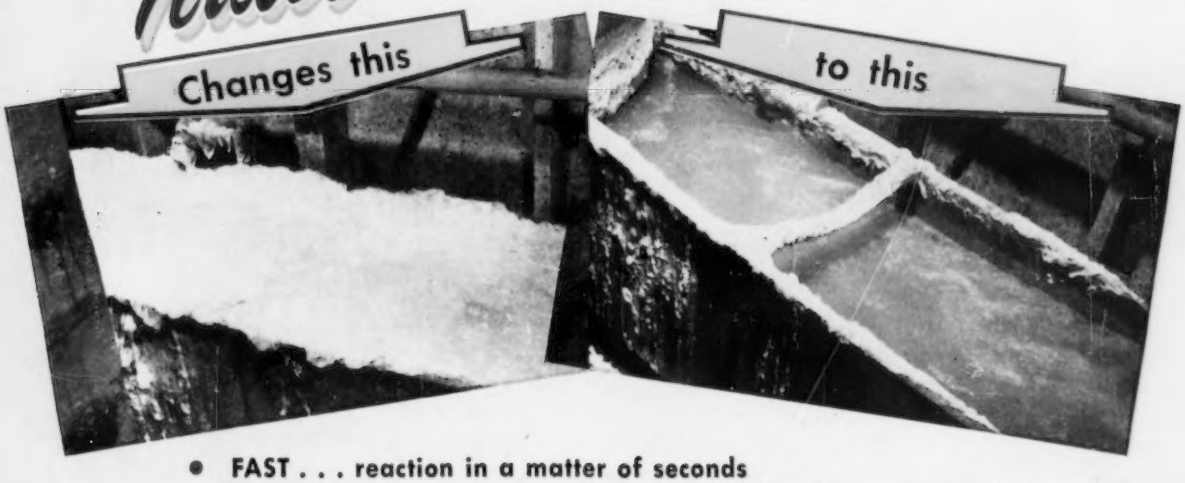
PAPER TRADE
JOURNAL

- *How Hammermill Planned Its N.S.S.C. Project*
- *New Principles For Screening Groundwood*
- *Improved Method of Singeing Felts*

January 2, 1956

Nalco 71-B **LIQUID ANTIFOAM**



- **FAST . . . reaction in a matter of seconds**
- **EFFECTIVE . . . as a defoamer—as an antifoam**
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Here is what happened when *liquid* Nalco 71-B was tried in a well-known mill plagued with the foaming problem of high-resin pulp.

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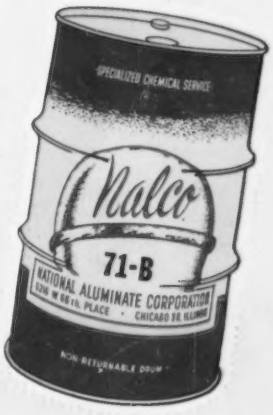

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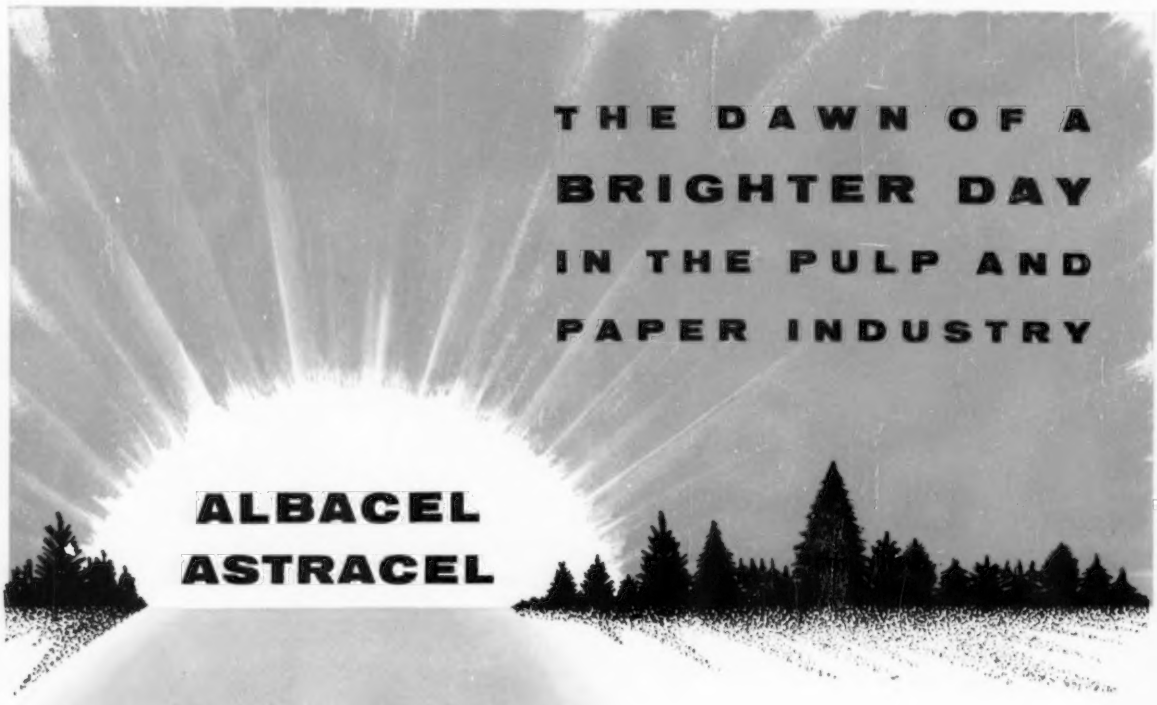

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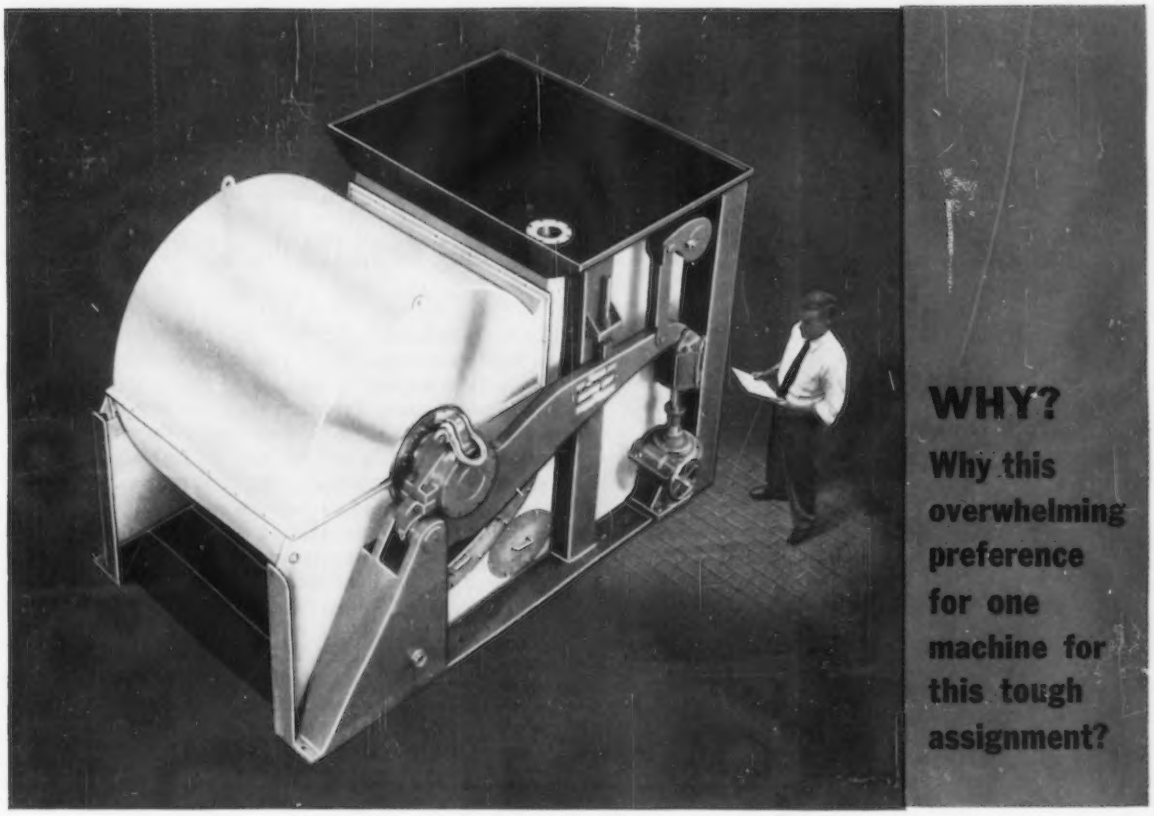

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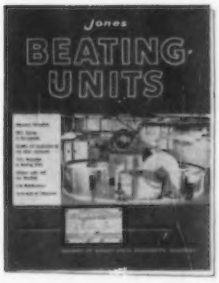

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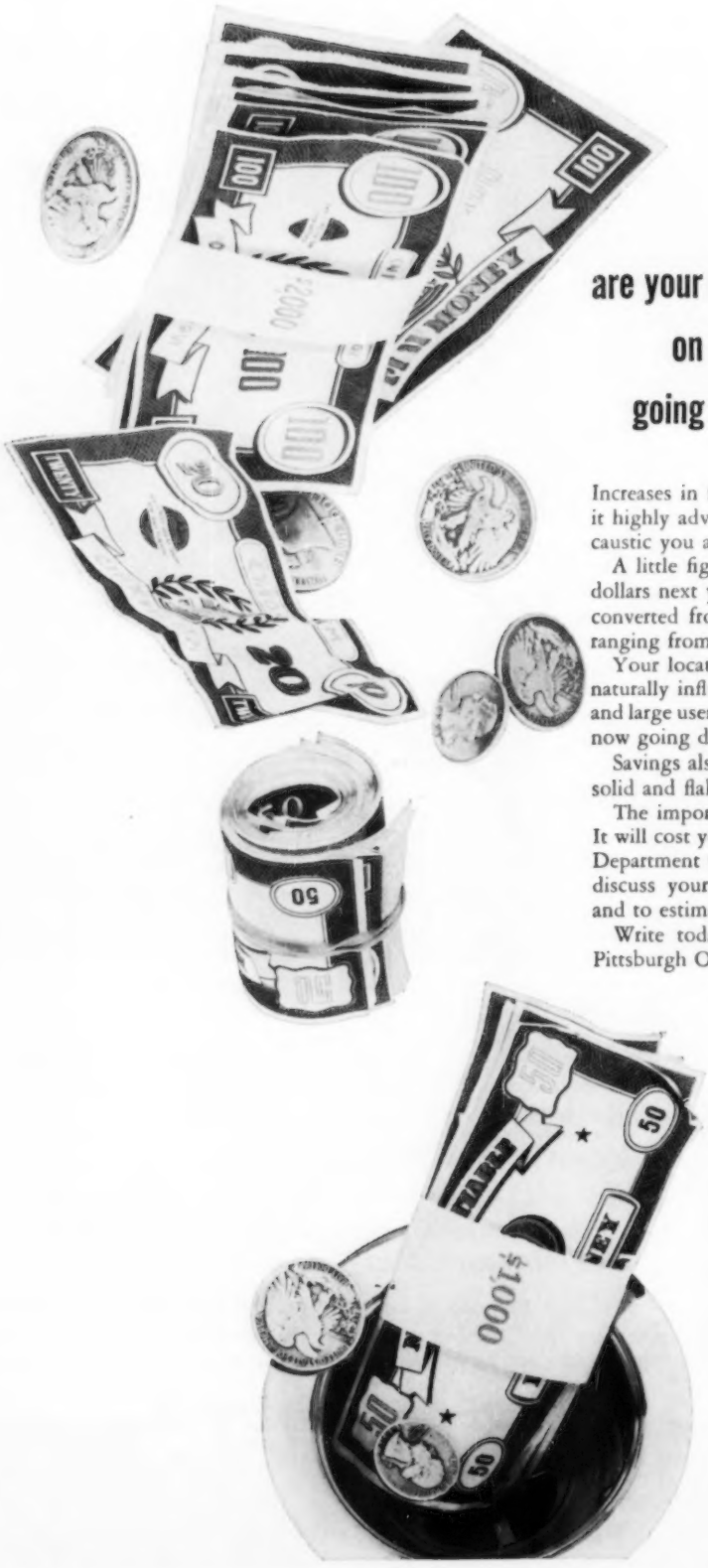

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REMEMBER THESE DATES

JAN. 25-27: Canadian Pulp & Paper Assn., Montreal, Que., Canada.

FEB. 19-24: Paper Week in New York City.

FEB. 19-24: Annual Meeting American Paper and Pulp Assn., Waldorf-Astoria, New York, N. Y.

FEB. 20-23: Technical Assn. of Pulp and Paper Industry Annual Meeting, Hotel Commodore, New York, N. Y.

MAY 7-9: Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

PAPER TRADE JOURNAL

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TRENDS

JANUARY 2, 1956

First Quarter Pulp Market

A summary of first quarter wood pulp prices includes a rise of $5 for Scandinavian and Finnish unbleached krafts to $120 per ton for standard grades. U.S. Western unbleached kraft was boosted $5 to a spread of $115-$125, duplicating Canadian levels, which held the old price. Both U.S. and Canadian grades of semi-bleached kraft will match the Finnish price of $140, which represents an advance of $5 for North American levels. The only change in bleached kraft quotes, foreign or domestic, was in the tonnage of one Swedish producer, termed insignificant in this market, who raised $2.50 to $155 U.S. dock. U.S. and Canadian bleached sulphite is up $5 to $145-$150 here, and a straight $150 from Canada. Scandinavian and Finnish quotes held at the previous $150 level. North American bleached soda pulp is up $2.50 to $145 delivered. No price alterations were effected in either bleached hardwood sulphite or unbleached sulphite grades. Canadian groundwood will sell at $90 per ton delivered in the Mid-West, and from $82.50 to $87.50 for Eastern delivery.

Showdown Approaches

A showdown is fast approaching in Quebec Province, Canada, where Premier Duplessis is pushing newsprint producers hard for a special price to Quebec publishers. Just after the producers were informed by the Provincial government that they had only until the end of the year to lower the price or face the certainty of a government control board, Abitibi Power & Paper Co. Ltd. and Anglo-Canadian Pulp & Paper Co. readjusted their previous increases, the first coming down from $5 to $4, and the second raising $1 to $4.

Corrugated May Go Up

A lot of export demand and out-of-town buying is adding to the present tight old corrugated wastepaper supply situation in the New York market. Mills are taking all tonnage in sight. Look for a price rise, rumored for weeks, to be effected soon if the supply situation doesn't improve.

Folding Boxes Record Gains

A report covering output for half the folding box industry shows an increase in shipments of 7.3 per cent in eleven months of this year over last, the Folding Paper Box Association announced. November shipments, catching the tail of the Christmas rush, topped 1954 by 14.7 per cent.

Canadians Boost Output, Exports

Over-all output for Canadian pulp and paper mills for 1955 was five per cent higher than production for 1954, R. M. Fowler, President of the Canadian Pulp & Paper Association, announced. The value of total Canadian exports for the year increased seven per cent from the year previous. On a tonnage basis, newsprint exports from Canada increased 3½ per cent and wood pulp shipments were up 8½ per cent. All grades of pulp and paper showed substantial advances from last year's levels, excepting dissolving and special chemical pulps. Big leader was bleached sulphite, which tallied a 21 per cent rise this year over 1954.

Products for the paper industry

R. T. VANDERBILT CO. INC.

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Dierks Lumber To Build Paper Mill

After a false start into newsprint production in 1954, Dierks Lumber Co. has settled plans for a paper and linerboard mill near Pine Bluff, Ark. Dierks operates lumber mills and has wide timber holdings in western Arkansas and eastern Oklahoma.

Designed to produce 150 tons per day of kraft paper and board, the new pulp and paper mill is expected to be in operation by September 1957.

Rust Engineering Co. has been engaged to construct the plant on a 1480 acre site adjacent to the Pine Bluff arsenal. The area lies about five miles northeast of the city of Pine Bluff.

Fred M. Dierks Jr., a vice-president of Dierks, is reported to have said that the company was expecting approval of an Interstate Commerce Commission permit for Missouri Pacific Lines and the De Queen and Eastern Railway to build 19 miles of railroad through the forest areas of Howard County. The period for filing protests to the construction has lapsed, Dierks said, with no objections being made.

The MoPac-D and E application filed October 19 with the ICC said each company would build 9.5 miles of the line, which would bring out pulpwood and wood chips to be used in the Pine Bluff mill. The wood chips are a by-product of Dierks mills at Dierks and Wright City, Okla., the application said.

Plan $11 Million Newsprint Mill for Peru

Peru is reported preparing to enter the world's newsprint market in the near future. The move will be backed by Peru's Farm and Arigcultural Development Bank which will offer financing to newsprint producers for new plants at moderate interest rates.

The bank also plans to finance a national newsprint mill which will help make pulp from trees flourishing in the Amazonas Department of Eas'ern Peru. Private capital in the country and the support of international credit agencies will be sought in support of the new development.

Location of the mill, to cost $11 million, is tentatively set for the port city of Iquitos, on the broad Ucayali River, which has an abaundance of water the year round. An alternate site under consideration is at Pucallpa, also on the Ucayali, with a highway connection to Lima.

Technical studies of the project have been completed. The plant will have a capacity of 18,000 tons of newsprint a year, sufficient to take care of Peru's requirements at present.

In 1954, Peru imported 14,000 tons of newsprint from the U.S., Canada and the Scandainavian countries at a cost of $2 million.

Newsprint from domestic pulp was produced experimentally in Peru by French interests in 1953.

James River to Increase Market Groundwood Production

The recently established James River Pulp Corp. in Columbia, Va. is soon to install a second grinder and improvements in its pulp dryer. The addition of this equipment will raise the mill's productive capacity to more than 15 tons per day of market groundwood.

The firm first began production in March 1955 under the direction of its president Robert T. Reid. With its southern pine groundwood, the mill is catering to a lively market for such pulp among eastern paper and board mills from North Carolina to New Jersey.

A combination fourdrinier wire and squeeze roll attachment is used to dry the pulp for shipment. Operations of the mill are under the direction of Lloyd Ware, general superintendent and technical director. T. Lowery is groundwood pulp superintendent.

Plan Expansion of Tasmanian Newsprint Industry

Preliminary moves to expand Tasmania's wood pulp and newsprint industries will begin in February, according to Tasmanian Premier Robert Cosgrove.

Mr. Cosgrove said recently that the state government had granted Australian Newsprint Mills, Ltd., an option over a big f rest area in the Dover District of Southern Tasmania.

He said the company proposed to spend "several million pounds" on developing a wood pulp or pulp and paper manufacturing project in the area, and would devote "a considerable sum" to preliminary investigations.

West Tacoma Newsprint Adds Grinder

The West Tacoma New-print Co., Tacoma, Wash., has recently installed a 30-ton Black-Clawson pulpwood grinder and a second Bauer 12-ton refiner. Newsprint production at the plant now estimated at 58,000 tons is expected to be increased to 62,000 tons by summer of 1956, mill superintendent Neil Robertson said.

The West Tacoma Newsprint Co. is strictly a newsprint producing mill, supplying newsprint to a number of newspapers in the area.

New Nat. Gypsum Plants Total 5 for 1956

National Gypsum will complete five new plants in 1956 to bring its total to 39.

"Two of these will be in New Jersey," reports Board Chairman M. H. Baker, "a new gypsum product plant at Burlington and a new paint plant at Raritan. Two more will be in Alabama; a plant at Anniston to manufacture paper for gypsum products and a fibre insulation board plant at Mobile. The fifth new plant will be located at Westwego, La., and will manufacture gypsum products."

Mr. Baker expects all of the plants to operate at capacity or close to it. He supports his optimistic predictions on 1956 construction by noting that "one year from today there will be 2½ million more Americans than there are today. This tremendous population growth," he said, "is bringing with it a continuing demand for more housing."

Michigan Water Control Men Probe Abitibi's Mill Plans

A public hearing January 5 has been ordered by the Michigan Water Resources Commission on waste-control plans for the new hardboard mill to be constructed at Alpena by the Abitibi Corp.

The company applied for a permit for "new use of waters of the state," as required by the state law.

Loring F. Oeming, chief engineer for the Water Resources Commission, recommended the hearing before acting on the application from the corporation.

"The staff has some reservations that will have to be resolved before preparation of an order," Mr. Oeming said. "The company proposes quite a load, as far as oxygen-demanding wastes are concerned.

Abitibi officials told Commission engineers that they hope to start preliminary work "as soon as possible," leading to the start of construction next spring so the plant can get into production by the spring of 1957.

It is proposed to empty cooling waters in Thunder Bay River and treated process waste and boiler water in Thunder Bay. Solids would be removed by chemical precipitation from 2,500 gallons per minute of waste. Sanitary sewage would go into the Alpena muncipal system.

Survey Begins Of Projected Mill Site In Nova Scotia

It has been reported that engineers will begin a survey of prospects for a $35 million pulp and paper mill January 5th near Mulgrave, Nova Scotia, in the Strait of Canso area.

Scott Paper Co. was listed last October 18 by Provincial Industry Minister Dauphinee as interested in a survey of this very area.

The Strait of Canso separates the mainland of Nova Scotia from Cape Breton Island, which is the western end of the province.

Tech. Service Group at S. D. Warren Absorbs Production Equipment Problems

At the S. D. Warren Co. mill, Cumberland Mills, Maine, many of the technical problems arising out of introduction and breaking in of new production equipment are now being solved by a new staff arm known as the "Technical Service Group." Its three members are Harold Cobb, Robert Hisey, and Martin Knowlton.

Realizing that the production supervisors do not have the time available to spend a day or a month on a single problem of new process or equipment operation and that the laboratory should not have its research interrupted to deal with these basically mill production problems, Warren created the new group for the express purpose of providing assistance to the production departments in solving these problems.

This group will investigate production problems at the request of the departments, with the purpose of providing sufficient information and recommendations to enable a decision to be reached. Those problems which turn out to be of a more fundamental nature, will probably be referred to the research laboratory.

The group will also be on the lookout for new products processes, and machines which might be of value anywhere in the mill.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending December 17, 1955, was 98.8 percent, compared with 99.7 percent, revised, for the preceding week. The ratio was 95.7 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending December 17, 1955, was 102 percent, compared with 102 percent for the preceding week, and 92 percent for the corresponding week last year.

(Detailed statistics on page 29.)

Celebrates Third Accident-Free Year

On December 9, the kraft pulp mill of Fraser Co., Ltd., New Castle, N. B., marked its third anniversary of operations without a lost time accident. The last such accident occurred in the mill on December 8, 1952.

The safety record of this mill, which was built in Newcastle in 1949, has won for it several national and international awards. At the present time, the mill is leading its section in the 1955 safest mill in Canada contest sponsored annually by the Pulp and Paper Magazine of Canada, Gardenvale, Quebec. It is also grouped with five other mills in first place in its class in the current annual safety contest conducted by the National Safety Council, Chicago, among pulp and paper mills in Canada and the United States.

In his message of congratulations to the mill, Aubrey Crabtree, president of the company at Edmundston, N. B., said that the safety record of the Newcastle mill was almost without parallel in the pulp and paper industry in Canada. He pointed out that for three years no employee in the mill has suffered disabling injury or hardship resulting from accidents while on the job. He commended the efforts of all personnel and particularly those of the mill's safety committee under the chairmanship of D. A. Adams, electrical superintendent.

Dr. Zivnuska to Analyze Timber Resource Review

Employment of Dr. John A. Zivnuska, associate professor of forestry at the University of California, to analyze the Timber Resource Review report of the U.S. Forest Service has been announced by William S. Bromley, chairman of the executive committee of the Forest Industries Council. Dr. Zivnuska has been granted a temporary leave of absence from the School of Foresty at the University of California to undertake the study. His report will be completed about January 15, 1956.

The Forest Industries Council, policy coordinating organization of the forest enterprises, is composed of representatives of the paper and pulp, pulpwood and lumber industries functioning through their respective associations: the American Paper & Pulp Assn., American Pulpwood Assn., and the National Lumber Manufacturers Assn.

In announcing Dr. Zivnuska's employment, Mr. Bromley stated: "The forest industries felt the need for an impartial analysis of the Timber Resource Review by a forest economist of outstanding ability who was not connected with either the Federal Government or the forest industries."

Quebec North Shore Firm Enters Aluminium Field

Quebec North Shore Paper Co., Baie Comeau newsprint producer, is becoming a partner in the multi-million dollar primary aluminium development program instigated by British Aluminium Ltd. at Baie Comeau, Que.

They are forming a new Canadian British Aluminium subsidiary with head office in Montreal.

The deal provides a majority interest to the British firm with a minority interest to Quebec North Shore.

There is another partnership tie-in in connection with Manicouagan Power Co., a wholly owned subsidiary of Quebec North Shore. British Aluminium is to get a minority interest while Quebec North Shore will keep a majority interest.

Through this arrangement, British Aluminium will retain a principal interest in the work in which it is most vitally interested — aluminium — and Quebec North Shore will hold its key interest in the field of power. However, both will be vitally interested in areas in which they have a minority interest, it is said.

W. Va. Employees Reject Union

Production and maintenance employes of the West Virginia Pulp and Paper Co., Tyrone, Pa., rejected, 385 to 237, affiliation with the United Paperworkers of America, AFL-CIO.

Champion Announces New College Scholarship Plan

The Champion Paper Foundation, through its president, Reuben B. Robertson, has announced a new college scholarship program for high school seniors in the Champion Paper and Fibre Co.'s. operating areas in Ohio, North Carolina and Texas. A total of six four-year scholarship awards, two in each of the three-state areas, will be granted for the 1956-57 college year.

The foundation is a non-profit corporation, organized in part to promote and aid scientific and educational activities. Under its program, the foundation will underwrite one-third of a student's "typical expenses" as listed by his or her college for each normal school year. In addition to the student awards, the colleges and universities attended will be given grants-in-aid to further the development of higher education.

Both boys and girls are eligible for the foundation's scholarships. They must rank among the top third of their high school classe graduating in the spring of 1956, while maintaining residence in Champion Paper's operating communities and graduating from high schools as set forth by the foundation.

A student may choose his or her own course of study and attend an accredited college or university, provided the course leads to an AB, BS or equivalent degree, and provided the student maintains the standards of the school and the Champion Paper Foundation.

To qualify for a scholarship award this year, a student must make application to his or her high school principal by January 10, 1956. Each principal of an accepted high school may nominate one or more students for consideration, depending upon the size of the school.

OBITUARIES

Henry J. Behnke, 81, retired treasurer of the Wisconsin River Paper Co., died at Appleton, Wis., December 19.

William E. Payne, 70, a retired electrical engineer for the Marathon Corp., Rothschild, Wis., died December 20. He had been employed by the firm for 45 years until his retirement last January.

Joseph P. Haberman, 70, a superintendent for the Fox River Paper Corp., Appleton, Wis., died December 22.

Leonard P. Taylor, 62, of Kennett Square, Pa., a sales engineer for the Sinclair Co. died December 13. Mr. Taylor covered Pennsylvania, New Jersey, Maryland, Virginia and West Virginia for the Sinclair Co. which manufactures paper mill wire cloth and rolls.

Mr. Taylor was at one time assistant to the late Leon M. Yoerg, one-time president of the American Writing Paper Corp., Holyoke, Mass.

He had been connected with the Sinclair Co. since 1951 when he left the Keith Paper Co. in Turners Falls, Mass. From 1939 to 1949 he was superintendent of the Byron Weston Paper Co. in Dalton.

Mr. Taylor, during his paper making career, was also connected with Franklin Mills in Landenberg, Pa.

Harry L. Brooks, 80, of Middletown, Ohio, died December 13.

Mr. Brooks was the vice-president and general manager of the Wardlow-Thomas Paper Co. for 54 years. He retired in 1944 at the time the company was sold. He also was director of the Raymond Bag Co.

Thomas S. Taranto, 74, a paper box manufacturer, died in Ridgewood, N.J., December 20 after a short illness. Mr. Taranto established the Thomas S. Taranto Co., a Ridgefield box manufacturing firm, in 1916.

Elof Hansson, 86, of Gothenburg, one of Sweden's leading and most successful businessmen, died on December 17. In 1897 he founded a trading firm of his own in Hamburg, Germany, specializing in woodpulp and paper, and when the world war broke out in 1914, this business was transferred to Gothenburg, Sweden's "Gateway to the West". Under Mr. Hansson's imaginative direction the firm expanded rapidly, subsequently branching out into other fields than forest products, and today is Sweeden's largest export and import house. The name of the firm remains Elof Hansson, and it has subsidiaries in New York and London, many South American countries, Hongkong, Bombay, Johannesburg and Capetown, while it is represented by agents in a great many other business centers. A modest and retiring man, who shunned publicity, Mr. Hansson in recent decades became better known in Sweden, not only for his signal success in business but also for his support of church projects and religious activities. His eldest son, Gunner, is president of Elof Hansson, Inc., in New York.

E. Douglas Hyndman, vice-president and general manager of the Halifax Power and Pulp Co. Ltd., and a widely known businessman and a leader in the community of Sheet Harbour, N.S., died suddenly December 12th, in Philadelphia of a heart attack.

Mr. Hyndman became manager of the Halifax Power and Pulp Co. Ltd. in 1947 when the plant was taken over by the Hearst Corp. Prior to his association with the Sheet Harbour mill, he was employed in Management positions with Anglo-Canadian Pulp and Paper Mills Ltd. at Quebec City and with St. Lawrence Corp. at Three Rivers, P.Q.

His first association with the pulp and paper industry in Canada was with the Brompton Pulp and Paper Co. Ltd. at East Angus, P.Q.

Mr. Hyndman became manager of the chairman of the Technical Section, Canadian Pulp and Paper Assn.

Roe S. Clark, 68, president of the Package Machinery Co., East Longmeadow, Mass., died December 22.

Mr. Clark was a past president of the Associated Industries of Massachusetts and the National Metals Trades Assn.

Frederick C. Leining, 87, a salesman for the Judd Paper Co., died last week in Holyoke, Mass. He had been in failing health for a long period.

Mr. Leining had been associated with the Judd Paper Co. for 40 years.

NEWS OF CONVERTERS OF PAPER AND PAPERBOARD

New 3-Dozen Egg Carton

In keeping with the trend toward purchase by the consumer of larger units of such commodities as milk, ice cream, and beer, Bloomer Brothers of Newark, N. Y., one of the country's pioneer producers of ice cream and egg cartons, has just announced a 3-dozen egg carton.

The new egg carton provides a firm and compact nest for a good week's supply of eggs for the large family. Its introduction stemmed from the success this carton manufacturer has enjoyed with its widely used ½-gallon and 1-gallon ice cream packages.

The desire of shoppers to accomplish their whole week's grocery shopping at one time, coupled with the increased capacity and efficiency of the modern refrigerator has brought about a revolution in merchandising methods which packaging experts are watching closely.

Bowaters Incorporates a Fiberboard Subsidiary

Bowaters Fibreboard Co. filed a charter of incorporation with the corporation department of the Secretary of State's office, Dover, Del. Authorized capital stock of the firm is 6,000 shares, no par value. Corporation Trust Co., 100 W. Tenth St., Wilmington, Del., is serving as the principal office.

New York Group Buys Miami Valley Coated Paper Co.

Purchase of the Miami Valley Coated Paper Co. of Franklin, Ohio, by Frank Schulman of New York, and an associated group, has been completed.

All stock of the Franklin company was purchased by the group which will continue to operate the Franklin company under its present name.

Mr. Schulman is president of the Kupfer Bros. Co. of New York, which manufactures coated paper in a plant at Northbridge, Mass.

The Franklin firm was founded in 1925 by the late A. A. Srere, succeeding the Franklin Coated Paper Co. which occupied the plant in 1911.

The firm now employes 85 workers. All will be retained.

Mr. Schulman has announced no plans for change in the plant, and operations are expected to continue along present lines.

The mill contains three coating machines, calendars and other machinery, and produces a variety of coated papers. Capacity of the mill is rated at 35 tons a day.

New Firm to Make Paper Phonograph Records

A new company, Bing Crosby Phonocards, Inc., has been formed to manufacture paper phonograph records at a plant in Saddle Brook, N.J. The company will make paper phonograph records for industry and merchandising. It also is experimenting with paper phonograph greeting cards. Officers include A. Di Resta, president, and Everett Crosby, vice-president and treasurer. Bing Crosby is a stockholder in firm.

Equitable Develops New Delivery Bag

A new type of delivery bag for department stores has been developed by Equitable Paper Bag Co., Inc., Long Island City, N.Y. Called an A-Unit bag, it is designed to protect the delivery rate of smaller parcels and avoid delivery overcharges.

United Parcel Service has approved the use of the bag as meeting its A-Unit classification. The bag carries a printed line near the top to indicate point of fold. This enables store personnel to know without measuring that the package meets the minimum charge requirements of its delivery classification.

Le Roy, N. Y., Box Plant Shuts Down

The former Champion Container Corp. plant in Le Roy, N.Y., which has been part of the Krafco Corp. since September 1954, ceased operations January 1. It manufactures corrugated boxes and has listed its capacity as 180,000 sq. ft. per day.

Nevins Elected Sec. of Nevins Co.

M. J. Nevins Jr. has been elected secretary of the Nevins Co., manufacturer of packaging material, colored labels and folding cartons.

Brown Appointed To Colad Post

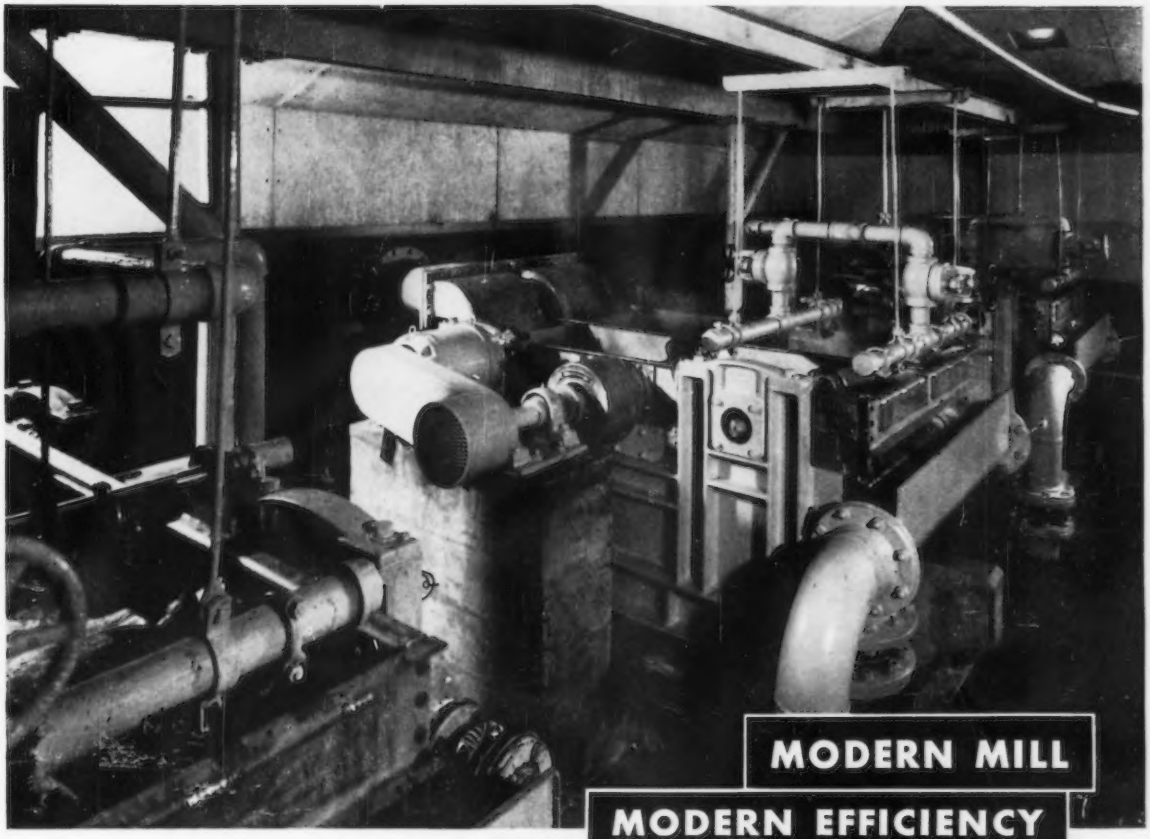
Arnold A. Brown has been appointed sales promotion manager of the Colad Co., Philadelphia, Pa., manufacturer of school book covers.

Mr. Brown will assist M. R. Poummit, vice-president and general sales manager of Colad in special promotional work and sales training and will operate out of Philadelphia.

O. C. Cook Named V-P And Gen. Mgr. of Bartram

Appointment of Orval C. Cook as vice-president and general manager of its affiliated companies, Bartram Paper Products Co., Ltd. and Bartram Industries Ltd. is announced by Crown Zellerbach Canada Ltd.

Mr. Cook will be in charge of sales and manufacturing with headquarters in Vancouver. He first joined Crown Zellerbach Canada Ltd. in 1927 as a member of the Hudson Paper Co., Ltd. staff in Winnipeg. In 1945 he assumed the position of production and distribution manager for Bartram Paper Products. He was appointed general sales manager for the company in 1953.



MODERN MILL

MODERN EFFICIENCY

That's why you see **BIRD JONSSON SCREENS**

This neat, compact installation in one of the great, modern mills, delivers three hundred tons of knot-free bleached kraft per day to the three-stage washers.

High capacity, effective screening action and exceptionally low cost per ton of stock screened are advantages that dictated the choice of Bird Jonsson Screens here as they have in hundreds of other installations.

Anywhere there's a job of knotting, bull screening or other perforate plate screening to do, you'll find Bird Jonsson Screens will do it measurably better at a definite saving in operation and maintenance.

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Regional Offices: Evanston, Illinois • Portland, Oregon • Decatur (Atlanta), Georgia

Ask us to make recommendations, layouts and estimates.

HAMMERMILL PLANT AT ERIE—The Neutracel plant erection discussed in this article centers around the new light colored buildings upper right center.

How Hammermill's Expansion Project Was Engineered and Constructed

Kurt C. Neuenfeldt,
Develpoment Engineer, Hammermill Paper Co., Erie, Pa.

In the fall of 1953, Hammermill Paper Co. management decided on a six million dollar addition to our Neutracel (neutral sulphite semi-chemical pulp) manufacturing facilities. The proposed new plant was to have a capacity of 100 tons per day, with provisions for early further expansion to 200 tons per day. It was to be constructed without interfering with existing operations, and it was to be completed within two years.

At the time this decision was made we had only the basic flow sheets, the background of operating a pilot plant, and a general idea where the new facilities would be located; so here was a real job to do. To meet the time table set forth by management, our first and foremost requirement was for engineering service.

Hammermill is an integrated pulp and paper mill making about 250 tons of spruce sulphite, hardwood sulphite, and hardwood semi-chemical pulp per day in nine digesters, and producing about 400 tons of fine papers per day on seven paper machines. We employ 2200 people and have an engineering staff of 35 men.

The work normally handled by our engineers consists of major maintenance, renewals, modernization, replacements, and some fair size projects, representing a total expenditure of between one and two million dollars a year.

Division of the Job

To handle the additional load brought on by this expansion program without interrupting the normal engineering activities we decided to divide the program into two unequal parts; to have the larger portion done by outside engineers and the remainder by ourselves.

In this division we assigned to outside engineering the large self-contained buildings and facilities that were located outside the existing plant and could be engineered and constructed without extensive field engineering and mill tie-ins, and which required practically no changes to present plant facilities.

For our own engineering force we reserved the numerous smaller but more intricate portions that had to do with changes and alterations within the existing plant and which required extensive coordination of mill shutdowns, etc. during the installation.

Common Misconceptions

And here I want to hit two of the common misconceptions about outside engineers.

Outside engineers are not all seven feet tall; they are not consultants; they cannot tell you how to design your process. They only do an expert and efficient job of constructing a plant under your direction. The client is his own best consultant.

And second, outside engineers do not compete with your own engineering force; they supplement and temporarily expand your force, allowing each to do its proper function under the most advantageous conditions.

In the selection of an outside engineer we encountered several different types of engineering organizations. Some do engineering only, others do construction only and still others do both. We decided to select a concern that could handle construction as well as engineering.

After carefully investigating a number of competent concerns we selected one of the nationally known engineering firms to handle the engineering and construction of the major portion of the expansion program, putting them to work in January 1954.

Writing the Contract

There are three basic types of contracts used between engineers and their clients:

1—*Fixed Price Contract.* Under this contract the bidder submits a fixed bid for the entire project. Naturally, this requires pretty complete engineering details before costs can be figured and this is time consuming. It calls for revisions in the bid price every time a change is made. Also, to protect himself against loss, the contractor must figure on every conceivable contingency, and the client pays for these contingencies whether they occur or not. An unscrupulous contractor might use inferior materials to increase his profit. Few engineer-contractors are willing to write this type of contract.

2—*Cost Plus Contract.* Here, the contactor makes an upcharge on everything he buys and on every service he renders. This is a very flexible contract, but it does have the disadvantage that, the higher the cost of the job the greater the contractor's profit. This does by no means necessarily result in padding the job, but it does give this opportunity and can give rise to misunderstandings.

3—*Actual Cost and a Fixed Fee Contract.* This is the type of agreement we chose for our program. Under this contract the contractor bills the client for engineering and all services, materials, equipment and labor, at the actual purchase price and at actual labor and salary rates without any up-charge. Trade discounts, cash discounts or any other advantages are passed on to the client and the contractor is compensated for his services by a fixed fee which is determined beforehand, and which is not subject to review.

A Third Misconception

Here is the third of my pet misconceptions: Too many people have the idea that everything you buy through an outside engineer costs you more than if you bought it yourself. On the contrary large engineering and construction concerns purchase in large volumes and get trade discounts higher than the ordinary client can obtain and they can control deliveries more closely than the smaller client. They do in fact earn back a good portion of their fee by their more advantageous and economical purchasing.

Under this type of contract the contractor becomes in effect the client's agent and the only way in which he can improve his profit is by completing the job as promptly as possible because in this way he earns his fee in a shorter period of time and can divert his personnel to other work.

Under this arrangement too the contractor is continually pushing for decisions and action because any holdups in engineering, purchasing or construction will delay completion of the project and hurt his earnings. And incidentally, the client does not make any money until the plant is completed and running.

Appointment of Project Manager

After the contractor has been selected and the type of contract agreed upon a project manager is appointed in each organization to represent his company. The client's representative is in overall charge of the project. All correspondence, specifications, purchase orders, accounting and legal matters pass through his hands and he must in turn coordinate the activities of his purchasing, accounting, legal, operating, maintenance and other departments in the execution of the project.

The contractor's project manager directs and supervises the activities of the project engineer and his associates as well as purchasing, accounting and various other functions performed by the contractor. Both project managers must be identified by name in the contract so that their positions and their responsibilities are definitely recognized in and by both organizations.

It is important that the client's project manager take advantage of and use the knowledge and experience of the various experts and specialists in his own organization.

His work calls for a considerable degree of diplomacy to enlist the sincere cooperation of his own associates, to prevent petty jealousies and wasteful competition between the two organizations.

It is especially important that he stay in close, intimate contact with the operating department because it is from this source that he gets the most valuable contributions, the many operating details that can easily spell the difference between success and failure of a new instalation.

He must introduce the contractor's project manager to his own organization. This introduction must cover purchasing, accounting, traffic, engineering, operation, maintenance, the police force, personnel, safety, medical, in fact all departments with whom the outside engineering concern will come in contact during the prosecution of the project.

Procedure Manual

A procedure manual is drawn up in which all routine functions are clearly spelled out. Accounting methods are compared and the engineer's accounting procedure is modified if necessary to suit the client's requirements.

This procedure manual originates with the contractor, it contains samples of all standard office forms necessary to conduct business between client and contractor, such as purchase orders, time sheets, daily field activity reports, distribution of correspondence and purchase order copies, etc. It serves as a guide in the handling of all routine matters, for the duration of the contract.

Detailed Estimate Is Next

As soon as basic specifications are established the contractor prepares a detailed estimate. This estimate is checked against actual costs at least once every month to control the financial progress of the project.

A list of equipment suppliers is agreed upon and detailed specifications are prepared and checked and agreed upon by both parties. Incidentally, in this listing of suppliers we made it a point and a matter of policy to include local suppliers wherever possible. We did not deliberately favor local suppliers, but we saw to it that they were given every opportunity to participate on a fair and competitive basis. Invoices for purchased equipment, materials, services and labor are submitted to the client once every month and are paid as promptly as practical.

The client's accountants and timekeepers are free to enter the construction side, check the timekeeper's records, observe the pay-off and in every way exercise such accounting supervision as the client deems necessary.

Program Schedule

As soon as the preliminaries are out of the way the contractor submits a tentative completion schedule in which quipment deliveries and construction and installation progress is indicated. This schedule is revised and reviewed as the job progresses and is brought up to date approximately once every month.

To keep the program rolling it is important to do "first things first," to make decisions promptly and to make them stick.

The following gives a general idea of the sequence of activities. Some of

these are naturally concurrent, some are overlapping.

We need first of all a process flow sheet. From this can be made a preliminary estimate, and on the basis of these two and the necessary supporting data we obtain managtment approval.

The next group of activites comprises selection of the engineer-contractor; selection of the major equipment; general arrangement of the equipment. (This gives us the space requirements, from which follows the size of the buildings and the type of construction. Now we can make a reasonably close estimate. This estimate is revised and reviewed once every month so we know at all times where we stand financially.) Next we can start: architectural and structural engineering; order major equipment; and order structural steel.

The design is now frozen. This is important—you must establish a "point of no return," beyond which there are no revisions and no alteration of the major decisions. The next group of activities includes: detail drafting and, in our case, a $\frac{1}{4}'' = 1'$ scale model.

Use of Scale Model

Thanks to this model we were able to get the full benefit of the experience of many people, in layout, arrangement, control and maintenance of equipment, without the tedious and often unsatisfactory task of pouring through stacks of drawings.

We could show the accountants, labor relations, safety, maintenance, traffic, time study and other personnel, just what we were building. We could demonstrate to Management and the board of directors where the money was going, and what the completed job would look like.

Construction supervisors are delighted to show their various trade foremen how the pieces fit together and discuss best sequence of equipment installation. We caught during the engineering phase, several serious and untold minor errors that would otherwise have become costly field changes or been impossible of correction. We have in the completed model a priceless aid for training new operators. A few hours at the model will do more good than days of chasing up and down stairs in an effort to identify equipment and understand the operation. As the job progresses we: Order minor equipment; start building construction; install machinery, chests and tanks; install piping; install electrical equipment; and instrumentation.

Toward the end of the construction period or at least two or three months before the actual start-up the operating department must appoint a supervisor or foreman who will be in charge of the start-up and of the training of future operators. This man should be excused from his routine duties and spend time with the client's project manager and follow the installation of the equipment during the final stages of construction.

A complete operating manual is prepared and full scale mock-ups of the control boards are built to aid this supervisor in his work. Similarly, a maintenance department stand-by crew must be selected and trained to give quick assistance during the breaking-in period.

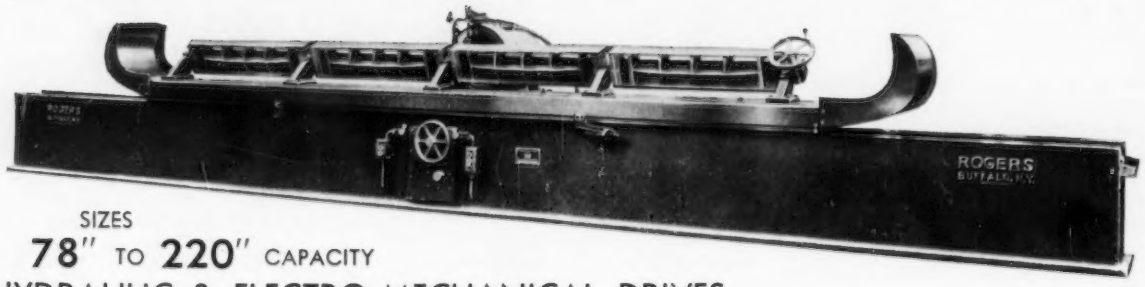
An equipment catalog is prepared showing and describing every piece of equipment in the place and the spare parts on hand, to aid in the training of this crew and finally definite and specific start-up dates are decided upon and all activities are directed toward these dates.

To prove that such teamwork pays off, we completed the project six months ahead of our original schedule, and at a substantially lower cost than estimated.

Presented at the Spring Meeting of the Pennsylvania-New Jersey-Delaware Division of the Superintendents Association, May 20-21, 1955.

ROGERS

SERIES 220 HEAVY DUTY KNIFE GRINDERS



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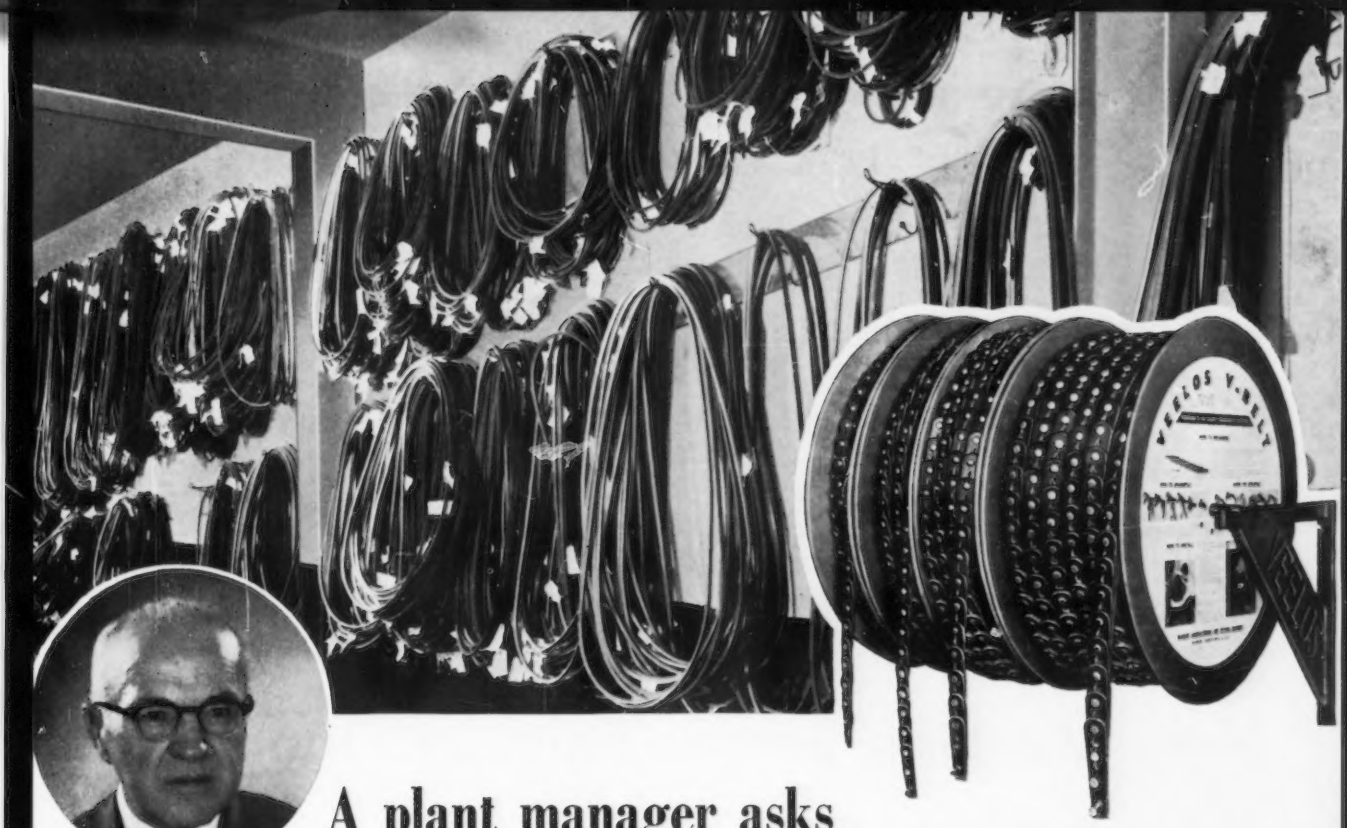

A plant manager asks 3 leading questions about V-belts

1 "I stock 85 different sized sets of belts—how can Veelos help me?"

With *four* 100′ reels of Veelos (O, A, B, C widths) you can replace as many as 316 different sizes of endless belts —and store your Veelos in *inches of space!* Veelos cuts your inventory to a minimum. No obsolescence or deterioration, no worries about specific sizes. With Veelos, your storage and inventory problems are licked!

2 "How does Veelos cut installation and down-time?"

Veelos is an *adjustable belt.* With Veelos, there's no tearing down outboard bearings, no resetting, tilting or moving motors to make belt replacement or repairs! And you don't have to replace a complete matched set because of one loose belt—Veelos belts adjust to any length, can be altered by adding or removing links!

3 "How do I eliminate costly belt vibration?"

Install Veelos in place of ordinary belts! Veelos belts are absolutely uniform; every stud and link is identical; every foot of the reel is identical and uniform; they're perfectly balanced. Your Veelos salesman can easily prove to you with a Veelos Vibration Analyzer (tested against any V-belt you might now be using) that Veelos *cuts vibration up to 90%!*

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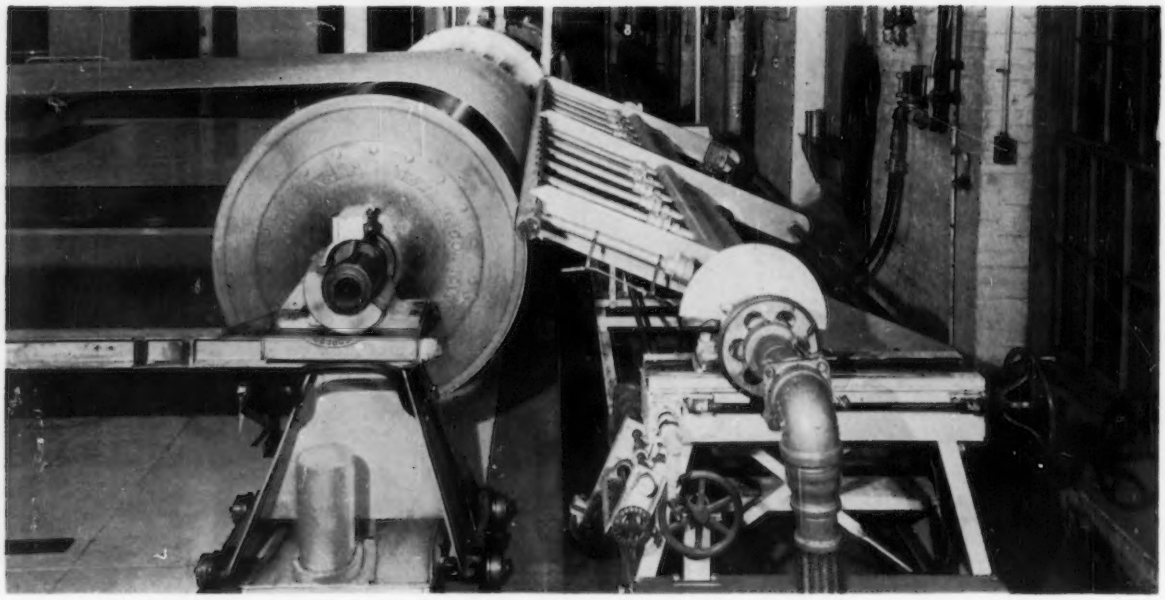


New Machine Singes Felts In One Pass

T. F. Rapp, Machine Designer, F. C. Huyck & Sons

One of the most critical operations in the manufacture of certain papermakers' felts is the singeing process. In the normal processes of manufacturing, long and uneven fibres are raised from the fabric. Basically, the purpose of singeing is to remove these from the surface and to obtain a smooth, even finish on the felt. To some extent, the same result can be accomplished by close shearing, but this has the disadvantage of leaving loose fibres, in much the same manner as a lawn mower deposits grass clippings. By contrast, singeing burns up most of the fibres and those remaining are removed by subsequent vacuuming.

Only One Type Invariably Singed

The only type of felt which is invariably singed is Yankee top (pick up) felts. In this case, singeing aids the transfer of the sheet from the wire to the felt, because of the smoother, more dense surface thus provided, and also prevents the sheet from following the wet felt after the first press. The degree of singeing varies according to the specific job to be done, and other classes of felts frequently are singed. For example, many felts, such as cylinder tissue and transite pipe, which pick up the sheet from a cylinder, are singed. This does not, however, apply to bottom felts on multi-cylinder board machines because the cushions provided by the nap reduces the possibility of a felt mark appearing.

A typical conventional singeing unit employs a ribbon-type gas burner in the order of 48″ long. The usual method of use involves advancing it across the felt in steps. With such narrow machines, it becomes necessary to slightly overlap each successive singed area, and this can potentially result in uneven bands.

To eliminate this possibility, a giant new machine which singes papermakers' felts the full widths of the felt at one time, producing a better quality surface finish, has been designed and built by F. C. Huyck & Sons engineers. Overlapping singe marks evident on fabrics processed with conventional narrow singers are eliminated, and better control is possible with the 200″ wide singer.

The New Machine

The new singer incorporates a commercially built gas burner 200″ long with an accurately drilled orifice-type 3″ diameter manifold mounted on antifriction bearings. The burner unit is permitted to rotate about those bearings in order to provide maximum flexibility in the selection of the optimum flame angle required in processing each specific felt. Further flexibility is provided by mounting the bearings on guide rails which are moved forward and back under the action of lead screws to permit adjustment of depth of singe. A turbine-type motor-driven blower supplies air under pressure. Natural gas is used, and this is mixed with air through a venturi valve. A flexible heavy duty hose with a quick-lock connection attaches to a 2″ gas line shut-off valve on the wall behind each dryer cylinder. Electric power is supplied through a reel-type cable. A 200″ long brush roll, motor-driven, is provided to brush the surface of the felt and prepare the fibres for the singeing operation in a step preliminary to actual singeing.

How It Works

The singer is equipped with three safety valve controls: two mounted on the building wall at the gas line connection behind each dryer cylinder, and one between the blower and the venturi valve. Their function is to immediately and automatically shut off the gas supply should the dryer stop or should the air supply fail. These provisions insure against burning the felt and against potential explosion.

The entire assembly is mounted on a structural steel frame, provided with wheels, and this constitutes a mobile carriage. For ease in moving it from one felt dryer to another, there is incorporated a motor and gear reducer drive.

Full-width singeing, performed with the aid of such accurate calibrating means as provided on this new machine, constitutes a major step toward improved quality of felt finish.

How Celite speeds board output up to 10%

...yet improves uniformity and smoothness!

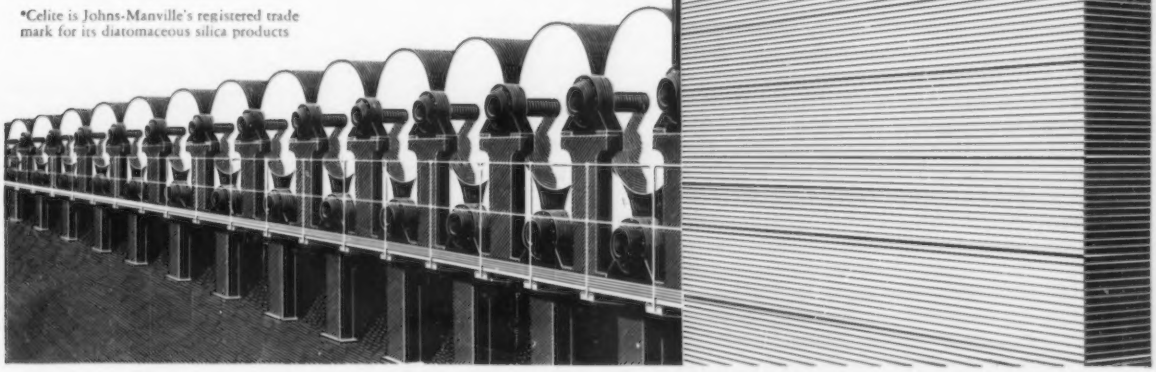
LEADING BOARD MILLS have increased output up to 10% by adding Celite* diatomite powders to their furnish. At the same time they have obtained better quality board with improved uniformity and smoothness. A test run in your mill will quickly demonstrate how you can secure similar results.

You will find that Celite is a highly porous material, with exceptional free-draining characteristics. Since it does not cake up or shrink, it materially improves drainage and drying, makes increased machine speeds possible. And because of its good suspension properties, Celite helps keep fibers evenly dispersed in water, resulting in greater uniformity of finished board.

These unique properties of Celite also permit greater bulk in machine boards such as chipboard, newsliner and solid manila. And for many types of sheet, Celite adds other desirable qualities such as greater opacity, higher brightness at lower cost.

To prove these advantages of Celite, a Johns-Manville Celite Engineer will gladly assist you in making trial runs in your mill. There is no charge for his services. Simply write Johns-Manville, Box 60, New York 16, N. Y.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products



JOHNS-MANVILLE JM PRODUCTS **Johns-Manville CELITE** PRODUCTS FOR THE PAPER INDUSTRY

New Principles for Groundwood Screening

K. H. Klemm

Anglo Newfoundland Development Co., Grand Falls, Nfld.

A method for the evaluation of efficiency of groundwood screens and screening systems is described and criteria for good operation are given. A considerable number of measurements made on actual screening systems are evaluated and it is shown that the efficiency of a screen is relatively independent of the type of construction and hole size and chiefly dependent on the location of the screen in the screening system and on the percentage of rejects allowed.

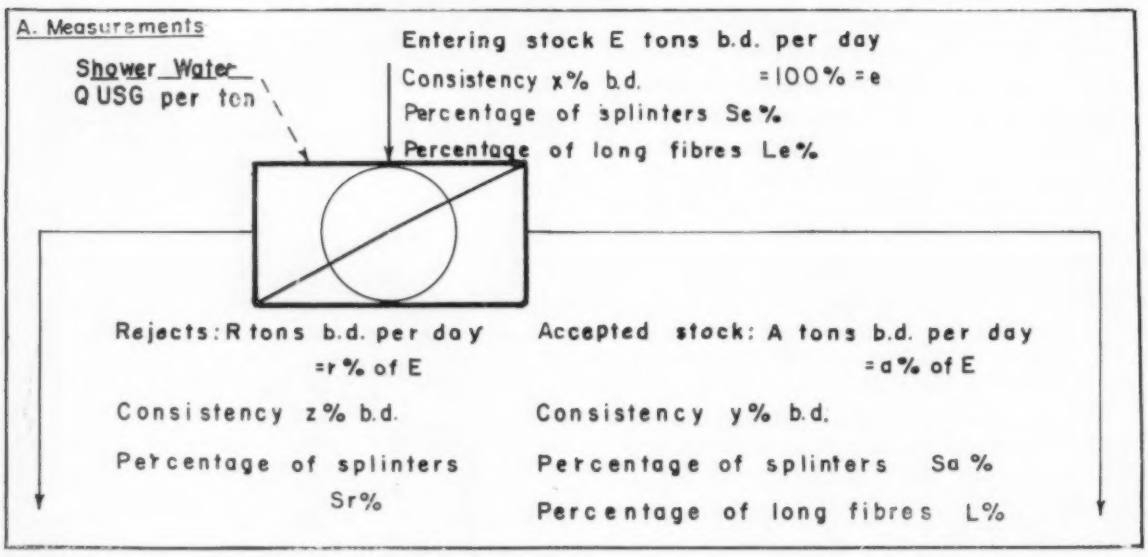
Optimum screening effects are to be expected at certain working conditions entailing a characteristic amount of rejects: 15 to 20% for the primary screens, 35 to 40% for the secondary screens and 60 to 70% for the refiner screens, if the splinter content in the accepted stock is to be restricted to 1.5% abs. Lower splinter percentages with normal screening systems are only obtained with an increase of the percentage of rejects at each stage.

The efficiency of screening systems is shown from the evaluation to be dependent on the amount of primary rejects, in which characteristic the screening systems for newsprint and roto principally differ. These percentages are 6—8% at 2% abs. splinter content in the accepted stock with newsprint and 12—15% at 1.5% abs. splinter content in the accepted stock with roto.

It is shown that this situation can only be changed by utilization of new principles of screening as outlined by B. Steenberg. The use of the principles of double screening and recirculation of accepted stock will improve the efficiency of groundwood screening if certain special modifications for groundwood are considered.

With the introduction of these prin-

Specially prepared by Dr. Klemm for *Paper Trade Journal* based on an address he gave at the 50th anniversary celebration of the Paper School at Darmstadt and subsequently published in Wochenblat fur Paperfabrikatiens 83, 261 (1955), No. 7, and 83, 349 (1955), No. 9.



B. EVALUATION

Entering Stock

a. Consistency ×% b.d.
—usual test

b. Freeness °C std.
—usual test

c. Entering splinters
=Se % abs.

d. Long Fibre Fraction
=Le %

Accepted Stock

e. Percentage of accepted stock
$$a = 100 - \frac{Sr\text{-}Se}{Sr\text{-}Sa}\ \%$$

f. Consistency of accepted stock
—usual test

g. Accepted splinters
=Sa % abs.

h. Long Fibre yield
$$y. = \frac{a.\ la\ \%}{le}$$

Rejects

i. Percentage of rejected stock
r = 100 — a %

k. Consistency of rejected stock
—usual test

l. Good stock loss
$$yg = \frac{100\ a.\ 100\text{-}Sa\ \%\ rel.}{100\text{-}Se}$$

m. Splinter yield
$$ye = \frac{100\ Sr.\ (Se\text{-}Sa)\ \%\ rel.}{Se.\ (Sr\text{-}Sa)}$$

Operating Data

n. Rate of feed to the screen
E tons bd. per day

o. Hole diameter in plates
inch—as given

p. Specific power consumption
$$Ns = \frac{24\ Ni\ K.W.H.\ per\ ton}{E}$$
Ni = load of motor K.W.

q. R.P.M. of screen shaft as given

r. Shower water consumption:
$$= \frac{a\left(\frac{1}{v} \cdot \frac{1}{z}\right) \pm 100\left(\frac{1}{x} \cdot \frac{1}{y}\right)}{6\ oz.}$$
USGPM per daily ton

FIGURE 1—Calculations of Screening Efficiency

ciples, it is possible to maintain a splinter content as low as 0.5% abs. in the accepted stock, the long fiber yield being improved at the same time, while there results only a small increase of the percentage of primary rejects.

Considerations related to the refining system explain the difficulties in many groundwood mills. Formulas are given for calculation of the amount of rejects in circulation in the refining system, based only on a few simple measurements. It is shown that the capacity required in the refining system is dependent on the amount of splinters entering the screening system and the amount of splinters tolerated in the groundwood delivered to the paper mill. Therefore each decrease in splinter content of the accepted stock increases the load on the refiners with normal systems. However, with the introduction of the recirculation principle, the rate of circulation of good stock in the refining system is reduced and therefore it is possible to achieve cleaner accepted stock without overloading the refiners. This principle therefore is of special value for this part of groundwood screening.

As a result of the considerations and calculations in this paper, the introduction of modified Steenberg principles for groundwood screening is strongly recommended and will result in improved groundwood quality for both roto and newsprint production.

The most important of the recent advances in the manufacture of groundwood — containing papers have been chiefly mechanical, resulting in increase in the cost of paper machines and the necessity for very high operating efficiency to make the running of these machines pay. A point now seems to have been reached where techniques in the production of groundwood have lagged behind the progress made in machine design. The field of interest has therefore already begun to shift to stock quality and preparation. In the following, a contribution in this direction is offered, embodying the use of certain new methods in groundwood screening.

Measuring Screening Efficiency

In groundwood screening the screen in general use is the rotary type. This paper is restricted to consideration of this type, though the principles developed are applicable to any screening system or any type of screen.

Up to the present time, the efficiency of screens has not been satisfactorily measured either by paper mills or manufacturers. In mills manufacturing roto, where the sliver content is very important, this is utilized as a measure of screening efficiency. Newsprint mills, which can tolerate a certain amount of sliver, usually use the capacity of the screens as a method of evaluating them. Neither of these gives data of any use in designing a new screening system. These are accordingly built on a purely empirical basis.

It is not possible in this paper to give figures for special designs, but from the formula given, mills should be able to determine the efficiency of a screen in any given stage, and by comparing the data of screens in a particular mill with the data presented here, the necessary modifications to give better screening should be obvious. The information given should also provide a new viewpoint for manufacturers of screening equipment, especially in regard to the secondary and refiner screens.

Up to the present time, screen performance has been expressed only in terms of absolute figures, e.g. tons of accepts or rejects, percentage of slivers in the accepted or rejected stock. These figures are of value for *one* mill but, as is shown in the following example, are useless for comparison between different mills.

A certain type of screen may operate in Mill I under the same conditions (capacity, hole size, shower water quantity) with an accepted sliver content of 0.6 percent and in mill II with as high as 1.6 percent. This screen is accordingly called good by Mill I and bad by Mill II. If, however, the sliver content of the incoming stock is examined (3% in Mill I and 8% in Mill II), it is seen that in each case 20 percent of the slivers entering passed the screens to the accepted stock. The screening efficiency is thus the same in each case.

From this example it is clear, that to describe the efficiency of any screen, *relative figures* should be used, that is, where the absolute quantity of a given fraction in the out-going stock is expressed as a percentage of the same fraction in the feed. This method has the added advantage of being almost independent of the instruments used for fractionation and of the working conditions in the laboratories, and is thus of considerable importance.

The primary requisite in the evaluation of screens is thus an adequate *descriptions of the feed*. This is adequately defined by measure of:

a) Consistency
b) Freeness (1)
c) Sliver content*
d) Long fiber fraction*

* "Sliver content" and "long fiber fraction" are terms for certain components of groundwood which are not commonly used in North America in a clearly defined manner. For further information reference (2) should be consulted. As relative figures are used in these considerations, an exact definition is not especially necessary. Within reasonable limits, the coarse fraction of any classifier (usually on a 14 mesh wire) may be used to calculate the "sliver content" and the next finer fraction (usually on a 24 or 30 mesh wire) is suitable for calculation of "long fiber fraction."

The efficiency of a particular screen can only be adequately defined when the following data are obtained:

For Accepted Stock

e) The consistency of accepted stock
f) The accepted stock as percentage of total feed
g) The absolute sliver content in the accepted stock
h) The long fibers in accepted as percentage of the long fibers in feed

For Rejected Stock

i) The percentage of rejects as percentage of total feed
k) The consistency of rejects
l) The good stock in the rejects as percentage of good stock in the feed (100% - splinters)
m) The slivers in the rejects as percentage of splinters in the feed

As a general rule, only (e), (f) and (i), (k) are measured and used without regard to (g), (h) and (l), (m). That it is absolutely necessary to use these additional figures can be visualized by considering a screen where the accepted stock shows as 100 percent. Such a screen by the conventional method of defining efficiency is very efficient, whereas in fact all the splinters are going to the accepted, and this shows up at once when measurements (g), (h) and (l), (m) are available. Whereas the fallacy is immediately detectable in the extreme quoted, it is usually not seen in any intermediate case.

From now on in this paper, the following terminology is used for convenience:

Absolute slivers content in the accepted stock = g = "accepted slivers"
Long fibers in accepted stock as percentage of the long fibers in feed = h = "long fiber yield"
The good stock in the rejects as percentage of good stock in the feed = l = "good stock loss"
The splinters in the rejects as percentage of slivers in the feed = m = "sliver yield"

It is shown later how important and instructive the "long fiber yield" figure is. By the use of this unit of measurement, it can be seen the extent to which the screen is capable of separating long thin fibers from long but thick slivers*. The achievement of a high "long fiber yield" is important in order that the quality of groundwood produced in the grinder room can be maintained for the paper machines. At the same time, the rejects should only contain the slivers and fiber bundles that are initially of

* Especially difficult because the holes in the screen plates are round.

no use. The screen performance in this respect is shown by the "sliver yield" and "good stock loss".

In addition to (a) to (m) above, the following data with regard to the screen concerned are needed to define the situation in a completely unambiguous manner:

n) Rate of feed to the screen as it is (tons b.d./day)
o) Hole diameter in plates (inches)
p) Specific power consumption (kWh per ton b.d. feed)
q) R.P.M. of screen shaft
r) Shower water consumption (U.S.G. P.M./ton per day)

Methods of Evaluating Screening Efficiency

The above discussion and the measurements necessary to gain the required data are summarized in Fig. 1. By the use of such figures, truly objective comparison for screening equipment between different mills can be made. The measurements and calculations necessary to obtain the screening efficiency, in spite of the large number of figures that are needed, can be simplified by the method that has been previously indicated in the references (1) and (2).

The sliver content in the three streams of a screen can be regarded as a separate component. A material balance over a screen can be made if the absolute quantity of any of the three streams of stock (usually the feed) is known and if the distribution of splinters in feed, accepted and rejected stock is determined. If only relative quantites are required, the quantity of feed can be arbitrarily considered as 100. The formulae shown in Figure 1, Part B, are based on the above method.

The basic prerequisite for such an evaluation is good and careful sampling combined with an exact evaluation of sliver content. The samples must be taken with consideration for the natural variations of groundwood in suspension. If only *one* sample is taken figures representative cannot be expected. Thus composite samples over comparatively long time intervals (at least two hours) are recommended, all samples necessary for the evaluation of one screen being taken within the same time interval. The evaluation of sliver content and long fiber yield can be carried out by the usual classifiers, using the Canadian Standard Method (3) (4).

The method previously described for evaluation of a single screen can also be utilized for the evaluation of a screening system. In this case, the complete system is regarded as one screen, except for the coarse screen stage which is discussed in Part III of this paper. The necessary measurements are taken for the entering stock before the first screening stage, for the accepted stock in the flume after the fine screens and for the rejects in the flume going to the coarse screens (primary rejects). The efficiency figures for screening systems so obtained are highly indicative of the system performance.

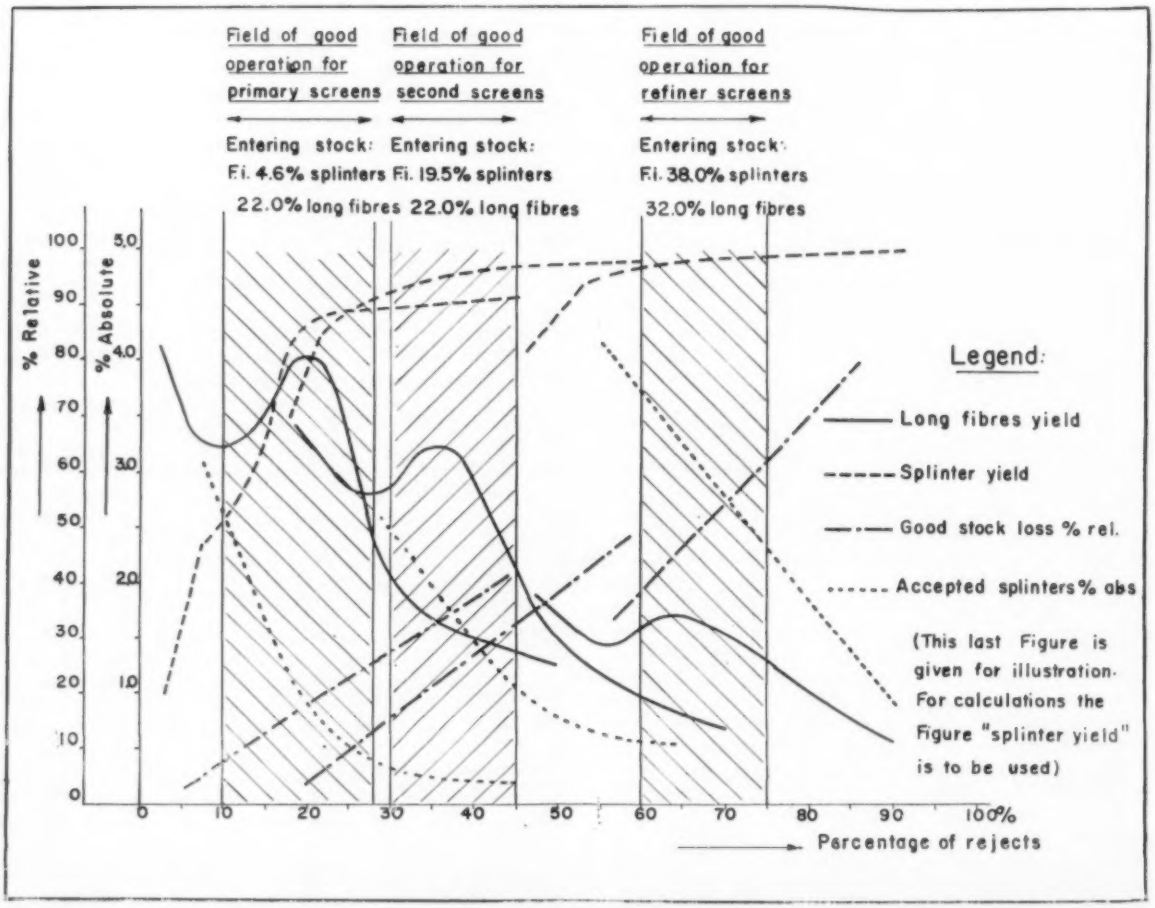

Field of good operation for primary screens
Field of good operation for second screens
Field of good operation for refiner screens
Entering stock: Fi. 4.6% splinters 22.0% long fibres
Entering stock: Fi. 19.5% splinters 22.0% long fibres
Entering stock: Fi. 38.0% splinters 32.0% long fibres
% Relative
% Absolute
Legend:
Long fibres yield
Splinter yield
Good stock loss % rel.
Accepted splinters % abs
(This last Figure is given for illustration. For calculations the Figure "splinter yield" is to be used)
Percentage of rejects

FIGURE 2—Efficiency Of Groundwood Screening—Fine screens

Part II—Evaluation of Actual Screens and Screening Systems

The methods discussed in Part I were used to evaluate measurements over a period of several years, thus establishing a considerable body of data. Consideration of this data showed that the percentage of rejects can be used as the abscissa for demonstration of the relationship of all other factors relating to screen efficiency, and this has been utilised in the consideration in this section.

The Efficiency of Single Screens

To check the efficiency of single screens, thirty sets of experimental results on different screen types were available. The efficiency figures calculated from these according to the methods given previously are shown plotted against percentage of rejects in Fig. 2. It is surprising to note from the figure that these measurements taken in different mills with different screens, under different operating conditions, such as shower water and hole size, show a considerable degree of uniformity. Each stage of screening has certain definite characteristics regardless of the screen type. The district maxima shown when long fiber yield is plotted against reject percentages enables the reject percentage for optimum working conditions to be fixed.

From this fact it may be considered that the amount of rejects of any one screen is dependent:

a) on the mechanical principles of construction
b) on the hole diameter
c) on the shower water quantity
d) on the rate of feed

If the rate of feed is equal to the screen capacity, only the influences (a) to (c) are effective. The combination of these factors determines the working conditions of the screen, hereafter termed "sharp" if the forces pushing the stock through the screen plates are relatively great, and "soft" if the screening is chiefly performed by the normal flow of stock without great pressure differential.

At first sight it would appear to be unimportant whether conditions (a), (b) or (c) determine whether the screen is in the "sharp" or "soft" category. The fractionation effect of a screen working "sharp" because of its principles of construction (the accepted stock of which has a too great sliver content) can be improved either by the use of smaller holes or by decreasing the amount of shower water. The performance of a screen with too low a capacity, working "soft" by cause of its construction, can be enlarged by using larger holes or more shower water.

Consideration of these facts points out that the hole size of the screen plates dose not determine the amount of slivers in the accepted stock.

If the screen performance is examined with regard to the "long fiber yield", however, the above possibilities for variations are seen to affect this and thus alteration of the conditions of operation to change a "sharp" screen to a "softer" one, or vice versa, must at the same time change the "long fiber yield" in the accepted stock.

As an example, the reduction of hole size in the screen plates of a screen working "sharp" due to its construction, with the object of reducing the sliver content, has the effect of reducing the long fiber yield to a considerable extent. Contrariwise, the switching over to bigger holes of a screen working "soft" because of its construction increases firstly the "long fiber yield" and only to a secondary extent the sliver content.

Consideration of these facts explains the occurrence of a maximum in long fiber yield for certain conditions in the different screening stages and further indicates that in the second and refiner screen stage, screens working "soft" with relatively big holes should be used.

In Table I, the result of the evaluation of our measurements, shown in Fig. 2, is presented so that the limits for the region of favourable operation for the various screening stages are shown. A survey of the capacity and conditions in various screening stages of the systems where measurements were made, is also presented in this table.

The work of the screens is seen to be progressively difficult in the secondary and refiner stages due to the high splinter content in the entering stock, necessitating a high "sliver yield" and commensurate loss of long fibers in the rejects to maintain the sliver content of the accepted stock at the normal level.

Under present day practice of screening in successive stages, relatively small screen plate holes are used to obtain this high "sliver yield" and these small holes are not suitable for the

TABLE I CAPACITY AND CONDITIONS OF SCREENS IN THE VARIOUS STAGES AND LIMITS FOR GOOD OPERATION

Location of the Screen	1st Stage			2nd Stage			3rd Stage		
Entering Stock									
a) Consistency—% b.d.	0.5-0.9			0.6-1.1			1.0-1.8		
b) Freeness—°C. Std.	85-140			175-350			more than 600		
c) Sliver content—% abs.	1.8-5.1			12-30			23-52		
d) Long fibre content—% Abs.	14-24			20-35			30-45		
Operation—Principle	**Sharp**	**Opti-mum**	**Soft**	**Sharp**	**Opti-mum**	**Soft**	**Sharp**	**Opti-mum**	**Soft**
ACCEPTED STOCK									
e) Consistency—% b.d.	0.5-0.7			0.3-0.5			0.2-0.4		
f) Percentage of total feed—% b.d.	90	81	72	70	65	55	40	35	25
g) Accepted Slivers % Abs.	2.5	1.0	0.4	2.5	1.75	1.0	3.7	3.2	2.3
h) Long fiber yield % rel.	65	80	50	58	65	42	32	34	25
REJECTED STOCK									
i) Consistency—% b.d.	0.6-0.9			0.7-1.2			0.8-1.5		
k) Percentage of total feed—% b.d.	10	19	28	30	35	45	60	65	75
l) Good stock loss % rel.	8	16	26	15	23	32	38	45	61
m) Sliver yield % rel.	50	86	89	92	95	97	96	97	98
	1st Stage			**2nd Stage**			**3rd Stage**		
Screening Conditions									
n) Rate of feed—tons b.d.	28-100			11-65			11-22		
o) Hole diameter in plates—inches	0.05-0.09			0.045-0.08			0.035-0.06		
p) Spec. Power Consumption—kWh/t.	11-28			13.5-59			27-64		
q) R.P.M. of screen shaft	180-375			180-400			180		
r) Shower water consumption—U.S.G.P.M./ton per day	1-12			10.5-17			16-53		

stock being screened. The effect of this practice is very low long fiber yield and a large recirculation of good stock in the refining system. The construction of special screens for the second and for the refiner stage of groundwood mills is long overdue.

Efficiency of Screening Systems

The number of complete screening systems evaluated was restricted to eight, the results of which are shown in Fig. 3. In spite of the comparatively small number, the results were such as to enable conclusions to be drawn readily. All eight systems were working on the usual plan of screening in stages and the figure shows that the efficiency of a system is dependent chiefly on the percentage of primary rejects, as was earlier shown in Fig. 2 for single screens. The screening system for roto and newsprint differ only by a higher percentage of primary rejects and thus a higher "sliver yield" for the roto.

Table II shows the results for screening systems in general, the data on which efficiency can be judged for roto and for newsprint. The relatively low "long fiber yield" (80% for News and 70% for Roto) and at the same time the relatively low "sliver yield" in the primary rejects (65% for News, 75% for Roto) can be seen. The screening efficiency which can be reached under optimum conditions was not attained in any of the systems investigated. The efficiency of present day screening practice appears to be low in spite of the quantity of screens used.

For any given screen, the range of percentage of rejects within which optimum screening conditions prevail is very narrow (Figure 2) and additionally this range is located dangerously near to the point where screening effect is lost completely. This may be the reason for the use of very soft screening and thus such a high "factor of safety" in European practice.

North American screening systems are simpler than those of Europe and the quantity of stock handled per screen is greater in the former case. Use of the principles outlined above in experimental work on system of both types has showed the difference as to:

a) Very sharp screening is obtained in the North American systems with resultant low "sliver yield", the higher sliver content in the accepted stock being tolerated by the paper mill.

b) The primary rejects therefore are relatively low (4 to 6 per cent of total groundwood production) and thus less equipment is required in North American systems to handle them.

c) The refining equipment is designed for sharp destructive action; the screening of the coarse refined stock is thus easy.

Present day practice in European screening systems can be considered due to an excess of caution, while the North American screening systems are designed especially for high capacity without too much consideration for screening action. Neither of these principles gives results that in any way approach the optimum which is possible.

TABLE II CAPACITY AND CONDITIONS OF SCREENING SYSTEMS AND LIMITS FOR GOOD OPERATION WITH NEWSPRINT AND ROTO

Groundwood for:		Newsprint	Roto	
ENTERING STOCK				
a) Consistency—% b.d.		0.6-0.9	0.5-0.8	
b) Freeness—°C. Std.		95-140	75-120	
c) Sliver content—% Abs.		4-6	1-4.5	
d) Long fiber content—% Abs.		18-24	14-20	
Primary Rejects—Quantity	**Low**	**High**	**Low**	**High**
ACCEPTED STOCK				
e) Consistency—% b.d.		0.45-0.55	0.5-0.6	
f) Percentage of Total Feed—% b.d.	96	88	90	82
g) Accepted Sliver—% Abs.	2.5	1.5	1.7	1.1
h) Long fiber yield—% Rel.	88	74	78	62
REJECTED STOCK				
i) Consistency—% b.d.		1.2-1.8	0.8-1.3	
k) Percentage total feed—% b.d.	4	12	10	18
l) Good stock loss—% Rel.	3	10	8	15
m) Sliver yield—% Rel.	40	73	68	81
SCREENING CONDITIONS				
p) Specific Power Consumption—kWh/t		145-180	180-270	
r) Shower Water Consumption—U.S.G.P.M./ ton per day		6-12	4-11	

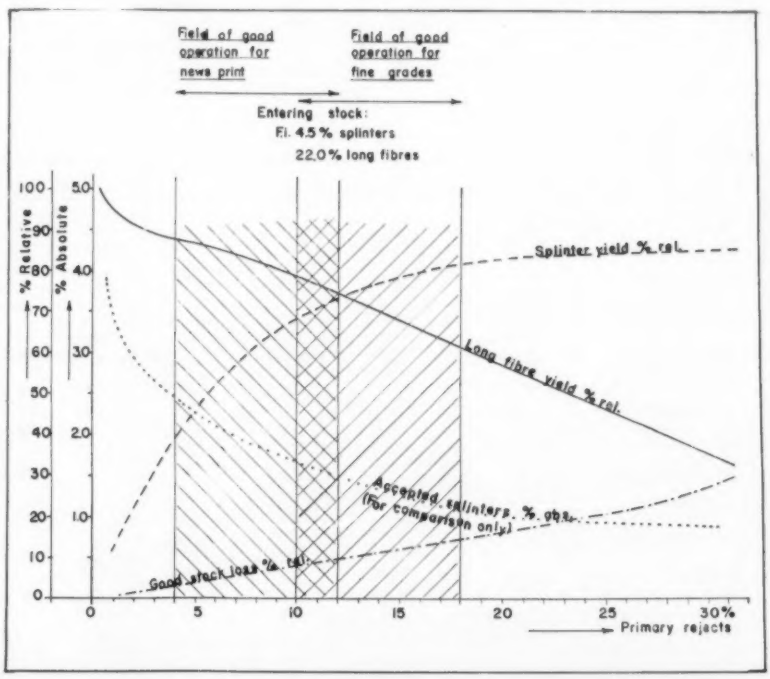


FIGURE 3—Efficiency Of Actual Screening Systems (refiner screens not included)

Part III—Possibilities for Efficiency Improvement in Groundwood Screening

The efficiency of any given system can be deduced by the methods discussed in Part I and shown at the bottom of Fig. 1. From evaluation of screening systems using these methods, standard figures for the different screening stages can be established and used to calculate the effect of alterations of working conditions in different screening systems. This method is used below.

Actual Screening Systems

Fig. 4 shows the result of calculations made for a normal two-stage screening system with: (a) "soft" screening, (b) "sharp" screening, and (c) optimum screening conditions as previously discussed.

The result of these calculations is, that with "sharp" screening principles (b), the rejects in the first screening stage show a composition which is so coarse that they are not suitable to feed to the second stage. Difficulties due to this fact are commonly experienced in the second screen stage of North American practice. These difficulties can be overcome by using large holes in the second stage and neglecting the consequently high sliver content of the accepted stock, or to carry the rejects of the first stage directly to the refiners with associated high loss of good stock and a high load on the refiner stage. The recirculation of the accepted stock from the second stage to the entering stock of the first stage enables large holes to be used, the slivers in the accepted stock being removed in the first stage. This principle was early adopted in some North American mills.

From the summary of the most important facts resulting from the calculations summarized in Table III, it can be seen that present day screening practice gives a good degree of efficiency only when optimum conditions prevail. Most screening systems are working extremely "soft" or extremely "sharp" and the conditions are therefore much worse than shown in Table III, where figures within the recommended limits were taken. Until now, no exact method of evaluating screening effect was known and this fact together with the narrow range within which optimum screening may be obtained explains why the present day results, as shown in Table II, are so far from those obtainable. It appears that the introduction of sound methods of evaluation of screen performance must effect a considerable increase in the efficiency of operation of groundwood mills.

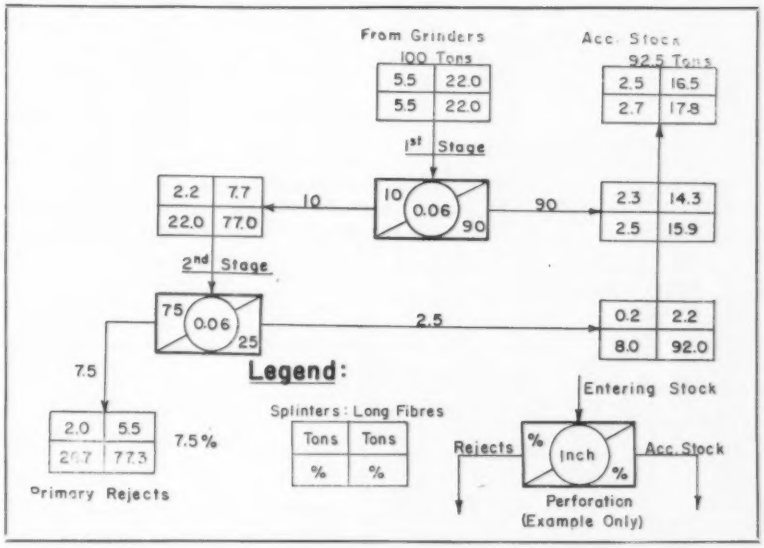


FIGURE 4—Normal Screening System Under Hard Screening Conditions: Figures on lines represent flow in tons B.D.: The time basis is that in which 100 tons are fed:—Calculations according to FIGURE 2.

TABLE III COMPARISON OF THE EFFICIENCY OF SCREENING SYSTEMS WITH DIFFERENT SCREENING PRINCIPLES AND WORKING CONDITIONS

Screening Principle:	Normal Screening in Stages			Double Screening With Recirculation		
Screening Conditions:	Soft	Sharp	Optimum	Soft	Sharp	Optimum
A. SINGLE SCREENS						
First Stage						
Percentage of rejects	28	10	19	25	10	15
Long fiber yield—% Rel.	48	65	80	60	75	80
Sliver yield—% Rel.	89.0	40.0	85.5	92.0	43.5	79.0
First Stage Rescreens						
Percentage of rejects	—	—	—	1.5	2.0	1.5
Long fiber yield—% Rel.	—	—	—	98	96	96
Sliver yield—% Rel.	—	—	—	80	65	65
Second Stage						
Percentage of rejects	45	75	35	30	50	30
Long fiber yield—% Rel.	40	30	65	60	60	75
Sliver yield—% Rel.	98	94	94	95	91	90
B. SCREENING SYSTEM						
Accepted Stock						
Percentage of Total Feed	87.4	92.5	93.4	89.5	92.5	93.5
Long fiber yield—% Rel.	67	75	92.5	77.5	85	93.5
Accepted Slivers—% Abs.	0.8	2.7	1.2	0.3	1.2	0.5
Primary Rejects						
Percentage of Total Feed	12.6	7.5	6.6	10.5	7.5	6.5
Good stock loss—% Rel.	8.3	5.8	2.3	5.6	3.5	1.7
Sliver yield—% Rel.	87.2	36.4	80.0	94.5	76.5	89.0

Application of New Screening Principles

A new collection of screening principles has been outlined by B. Steenberg (5) (6) in the last few years. Consideration of the defects in groundwood screening systems, as outlined above, shows that these principles are applicable and capable of effecting a considerable improvement. Steenberg's principles are:

a) The principle of double screening —no stock to leave the system as accepted until it has been screened twice, if possible, by screens of different principles.
b) The principle of recirculation, whereby the accepted stock of any secondary or lower stage is recirculated to the feed of the preceding stage.
c) The principle of mixing—the recirculated stock fed to any major stream should be not sliver in splinter content and not lower in consistency than the major stream.
d) The principle of constant feed whereby a part of the accepted stock is fed back to guarantee a constant feed to the screens.

These Steenberg principles are, however, especially related to the screening of chemical pulp and have as their object the lowest practicable sliver content in the accepted stock. In groundwood screening, as has been seen, the "long fiber yield" is of great importance. Since the probability of long fibers being rejected increases at the same scale as sliver content is decreased, the principles of Steenberg therefore need adjusting before they can be applied to groundwood screening. The modified principles which are applicable to groundwood screening are:

a) As few screening stages as possible
b) Large screen plate holes in the different screen plates in order that the accepted stock going to the filters has just the sliver content which can be tolerated
c) Maintenance of the mixing principle

In the following sections, it is shown that maintaining these principles, a low splinter content and at the same time, a high "long fiber yield" can be attained.

Figure 5 shows the result of the calculation of a screening system with double screening and recirculation under three conditions at the individual screens: "soft," "sharp" and "optimum." In these calculations made as previously indicated, relatively large holes are provided for the different screens. Therefore they are working with greater "long fiber yield" and lower "sliver yield", as shown in Figure 2. Certain difficulties are observed in the second stage as is the case with normal systems, but these can be overcome since it is only necessary to be sure that the sliver content of the secondary accepts is not higher than the feed to the first stage.

Table III shows the most important figures for both the normal and improved system. Comparing the two, it is seen that the improved system gives much more favourable results in that the sliver content of the accepted stock is decreased, the "long fiber yield" is higher, and the "good stock loss" with the primary rejects is lower.

In addition to the improvements which can be shown by figures there are the following practical facts to be taken into consideration:

a) The principle of double screening and recirculation gives a high factor of safety against increase of slivers due to damaged screen plates.

b) The screens provided to rescreen the accepted stock of the first stage enable rapid detection of the occurrence of broken screen plates in a previous stage.

c) A high factor of operating safety and a constant quality of accepted groundwood is obtained.

Therefore considerable advantage will occur, especially for roto if the principles discussed above are applied to groundwood screening.

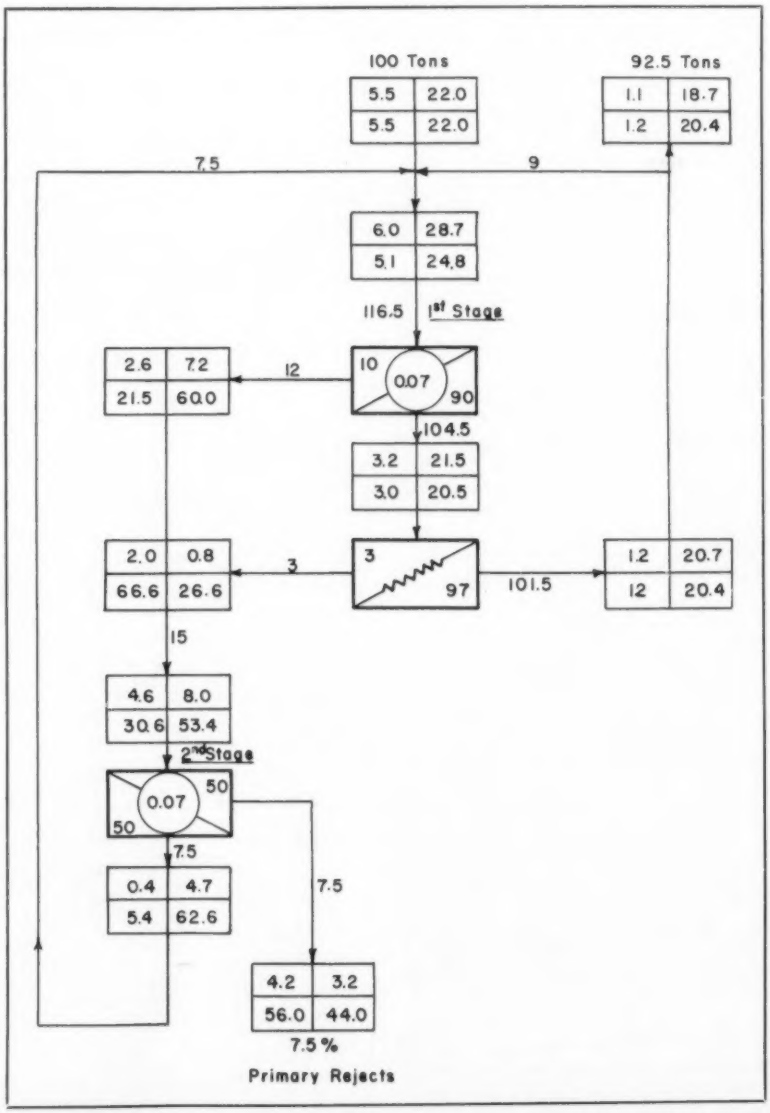


FIGURE 5—Recirculation System Under Hard Screening Conditions—(for legends see FIGURE 4).

Part IV—Refining and Screening of Tailings

In the previous section, the refining of rejects was not considered as it seems more appropriate to deal separately with this problem. In many mills, the refining of primary rejects is a continual embarrassment; the reasons for this can be seen if objective measurements are made on the systems.

Refining Principles and Screening System

From a survey of the development of reject refining equipment in recent years, it can be said that the refiners developed in Europe had as their primary objective the production of a groundwood that was of such a composition as to contribute positively to the structure of the final paper. The North American equipment has the opposite effect; that of grinding down the slivers and fiber bundles to a structureless material easy to screen but contributing nothing, except loading to the structure of the paper. This is shown by the data presented in Table IV.

The principle reason for the refining system difficulties in many mills is not due to type of refiners, but to the fact that the screens used are not suitable for the character of the stock to be handled. As an example of the controlling influence of the screens in the refining circuit, Reisten refiners are utilised in preference to Hydrafiners, in spite of the fact that the latter produce a better quality refined stock than the former (7) (8). The Reisten refiner has principally a besting action and thus its stock is more easily screened than the otherwise more suitable stock from Hydrafiners.

Figure 6 shows the manner in which the different refining principles affect the screening of the refined stock and the advantage given by the principle of recirculation. Case A of this figure illustrates the relationships typical for many European mills; the low sliver content, which is required in the accepted stock of the refiner screens of European mills, can only be obtained with normal screening systems by using very small holes (e.g., 0.035 in.). This results in a very low "long fiber yield." When the system is in balance, the feed of slivers has to be equal to the slivers removed by the refiners plus splinters in the accepted stock. To reach a balance, the splinter quantity slivers by the screening system builds up in the circulation of the refiner stage. In a case where the prevailing conditions lead to a continual in-

TABLE IV EFFICIENCY FIGURES FOR REFINING EQUIPMENT (7) (8)

Equipment:	Raffineur	Reisten Refiner	Hydrafiner	Haug Refiner
Capacity—tons b.d./day	10	22	16	6
Consistency—% b.d.	1.8	1.8	2.0	12.0
Specific Power Consumption—kWh/ton b.d.	86	80	83	280
kWh/ton b.d. and 10% splinter removed	52	31	22	35
Sliver Removal—% Rel.	17.2	25.9	36.0	81.0
Long fiber loss—% Rel.	2.9	7.5	3.3	24.0
Increase of fines—% Rel.	52.0	74.0	26.0	305.0

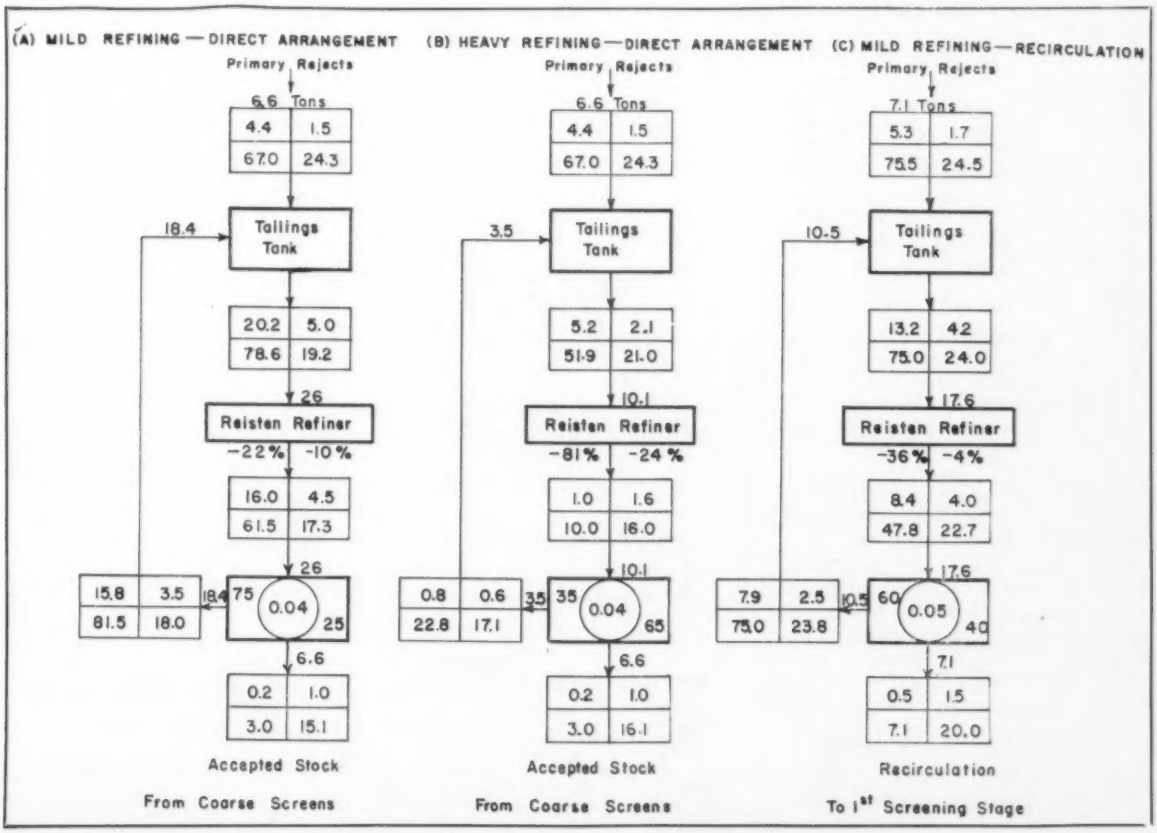


FIGURE 6—Refining System With Different Refiner Types—for legends see FIGURE 4.

crease of quantity in circulation, the balance is never attained, and a point is reached where operation is no longer possible.

In case B, the more favourable conditions are shown which result from the use of the cutting type of refiners in common use in North American mills. The drastic action of the refiners, which reduce the pulp to the condition of a filler, has rendered screening easy and even with the same hole diameter in refiner screens as in case A the circulation rate is low since the slivers have been ground to powder.

Case B of Figure 6 indicates the improvement in the conditions in the refiner stage than can be effected in a corresponding case to A by using larger holes in the screen plates. The circulation of rejects is reduced by this step and the relative sliver removal rate of the refiner rises because of smaller rate of feed. The use of Hydrafiners is possible since the larger holes of the screen plates allow both fibers and the fine stock particles to pass.

Refining System as Part of the Complete Screening System

Table V shows the effect of the accepted stock from the refiner screens on the finally accepted stock of the whole screening systems. The sliver content of the finally accepted stock increases in case C above, when larger holes are used in the refiner screens. However, when the relatively small percentage of the total, represented by the accepted stock from the refiner screens, is considered, it is seen that an increase in the sliver content of the same is not serious in regard to the figures which result. The possibility of relatively thick and inflexible slivers which may cause breaks on the paper machine must, however, be taken into account. The use of the principle of recirculation is very effective in reducing this possibility. The accepted stock from the refiner screens is about equivalent to the stock from the grinders fed to the primary screens and thus recirculation of same does not disturb in any way the operation of the fine screens. The resulting increase in rate of throughput is negligible in most cases.

As an added safeguard, Centricleaning can be used in the recirculated accepted stock of the refiner screens to remove the short, thick slivers produced in the refiners. Also the accepted stock can be sent to the secondary screens instead of to the primary screens. Such a screening system, which is suitable for use in high speed or roto mills, is shown in Fig. 7.

From the discussion above, it is obvious that the use of the recirculation principle, especially with the refiner

TABLE V DEPENDENCE OF FINAL SCREENING EFFICIENCY ON REFINING AND SCREENING OF REFINED STOCK

Principle of screening:	Normal Screening in stages		Normal Screening in stages	Recirculation to 1st stage	Improved Screening System
Screen Plates:	Rel. fine holes		Rel. large holes		
Refiner Used:	Reisten Refiner	Haug Refiner	Hydrafiner		
Circulation rate in refining system	4	1.6	2.2	2.5	2.5
Refiner Screens					
% of rejects	75	35	60	60	60
Long fiber yield—% rel.	22.2	62.5	37.5	37.5	37.5
Sliver yield—% rel.	98	80	94	94	94
Accepted sliver—% abs.	3.0	3.0	7.1	7.1	7.1
Finally Accepted Stock					
% of entering stock	100	100	100	100	99.8
Long fiber yield—% rel.	97	97	99	99	99
Accepted sliver—% abs.	1.3	1.3	1.6	1.1	0.5

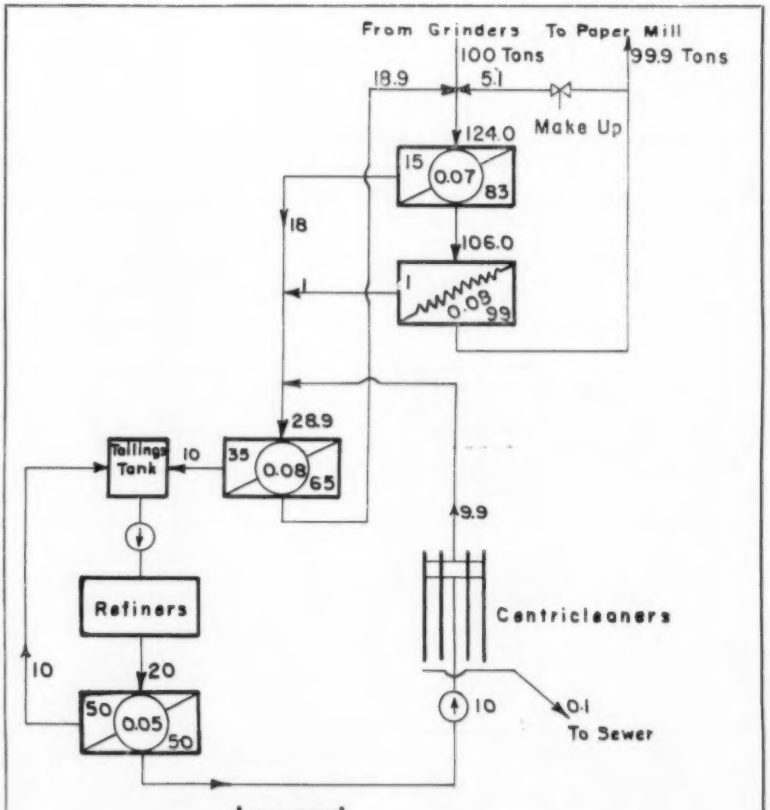


FIGURE 7—Recirculating System

screens, is very useful and enables existing difficulties to be overcome. It must be clearly realized, however, that the circulation of coarse stock in the refining stage depends on the amount of slivers that must be removed to attain the required quality of finally accepted stock. The percentage of circulating stock, r, can be calculated by the formula:

$$1)\quad r = \frac{100\,(s_e - s_f)}{s_f - s_r'}\ \%;$$

the rate of sliver removal of the refiners is:

$$s = 100 \cdot \frac{s_r - s_r'}{s_r}\ \%$$

If the percentage of primary rejects g is known, the amount of rejects circulating may be shown to be $k \cdot g$, where the factor

$$2)\quad k = \frac{100\,(s_e - s_f)}{g\,(s_r - s_r')}$$

in these formulae is

s_f = sliver content of finally accepted stock % abs.
s_e = sliver content of stock entering the system % abs.
s_r = sliver content before the refiners % abs.
s_r' = sliver content after the refiners % abs.

From equation (1), the amount of circ[illegible] stock and the feed to the refiners [illegible]

a) if the sliver content of the stock supplied from the grinder increases
b) if the sliver content in the finally accepted stock is reduced
c) if the rate of sliver removal in the refiners decreases

Unfortunately the sliver removal rate of the refiners decreases with increasing throughput and thus if (a) or (b) hold, (c) must follow. This explains the difficulties which prevail continuously or sometimes in many groundwood mills. The formula above enables the calculation of the relationships in the refining systems without measurements of certain difficult quantities. They show the basic law:

better screening = lower sliver content in the finally accepted stock = higher throughput through the refiners.

Thus whether the capacity of the refiners is sufficient for this must always be checked on. With use of the recirculation principle, the amount of good stock in the primary rejects as well as the amount of good stock circulating in the refining system is reduced, thus reducing also the load on the refiners, resulting in a lower sliver content in the finally accepted stock *without* a higher rate of feed to the refiners. Thus the use of the recirculation principle is of special value for improving the conditions in the refining systems.

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Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1955	Nov. 19 99.0	Nov. 26 98.0	Dec. 3 98.9	Dec. 10 99.7r	Dec. 17 98.8
1954	Nov. 20 94.5	Nov. 27 90.7	Dec. 4 95.5	Dec. 11 95.4	Dec. 18 95.7

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1954	93.3	94.0	93.1	92.2	93.7	89.3	79.1	92.1	89.8	94.6	93.8	86.2	91.6
1955	93.6	96.6	97.9	98.0	99.3	95.4‡	87.3‡	96.7‡	92.8‡	93.7‡	98.9‡		

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1948	1949	1950	1951	1952	1953	1954	1955
Year to Date	92.5	84.0	96.6	99.6	90.7	93.7	92.3	95.9
Year Average	92.1	83.7	95.8	98.0	88.6	92.3	91.6	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

1955			Nov. 19 104		Nov. 26 95		Dec. 3 98		Dec. 10 102		Dec. 17 102		
1954			Nov. 20 94		Nov. 27 88		Dec. 4 87		Dec. 11 94		Dec. 18 92		
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1954	89	89	90	88	90	89	74	92	98	94	93	82	88
1955	92	95	96	94	97	97	84	99	97	102	101		

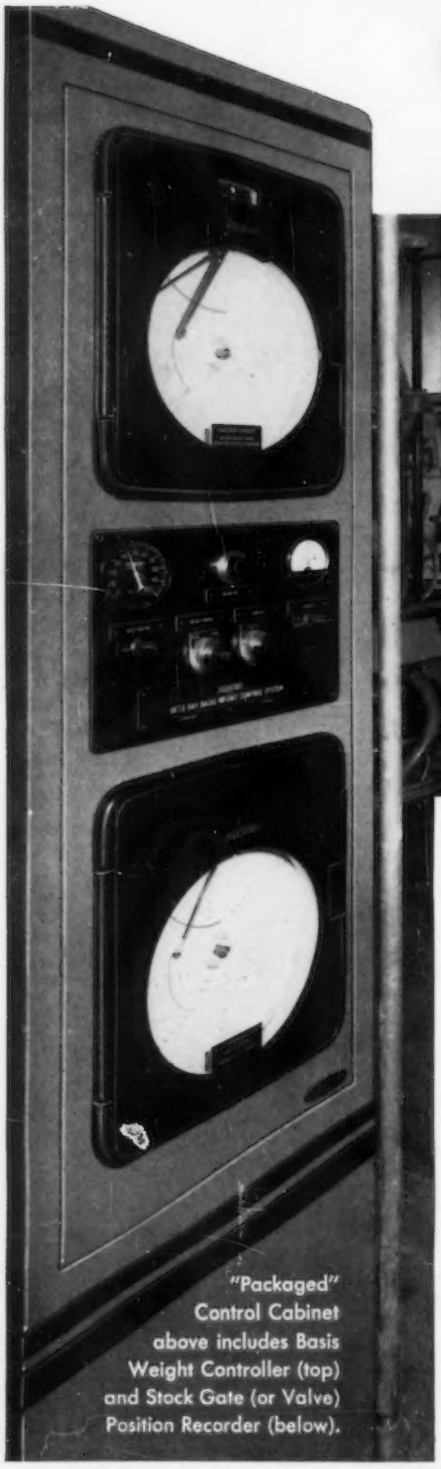
Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

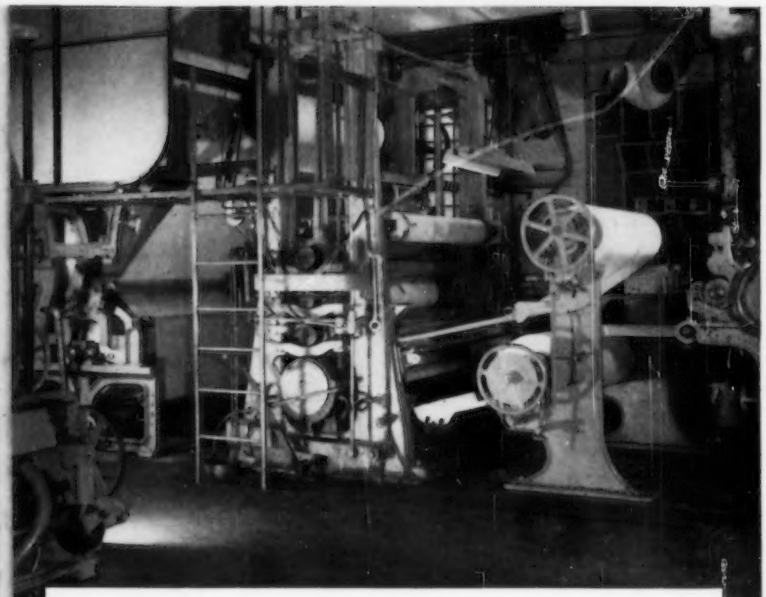
SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING Dec. 17, 1955	LAST WEEK ENDING Dec. 10, 1955	CUMULATIVE TO DATE January 1, 1955 to Dec. 17, 1955
% Activity	102%	102%	96%
Total Production (Tons)	296,461	285,519	13,509,069
Liner	100,210	100,700	4,621,917
Corrugating Material	44,578	49,188	2,079,437
Chip & Filler Board	6,392	5,557	291,949
Total Containerboard	151,180	155,445	6,993,303
Folding	51,169	51,813	2,478,919
Set-Up	12,832	12,813	638,750
Special Food Board	23,725	19,696	1,107,544
Other	57,555	45,750	2,290,553
Total Boxboard	145,281	130,074	6,515,766
Total Orders			
Received	229,795	264,700	
Unfilled At End of Week	568,726	638,940	

Cut Weight Variation as much as 40%



"Packaged" Control Cabinet above includes Basis Weight Controller (top) and Stock Gate (or Valve) Position Recorder (below).



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Beta-Ray Basis Weight Control

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

NEWS OF ASSOCIATIONS

Superintendents Local Meeting Dates

Date	Division	Place
Jan. 12	Joint with Kalamazoo Valley TAPPI	Hotel Harris Kalamazoo, Mich.
Jan. 26	Miami Valley	Manchester Hotel Middletown, Ohio
Jan. 27	Connecticut Valley	Roger Smith Hotel Holyoke, Mass.
May 18-19	Pacific Coast Join with TAPPI	Gull Lake Country Club Kalamazoo, Mich.

TAPPI LOCAL MEETING DATES

Date	Section	Place
Jan. 6	Empire State Central Dist.	University Club Syracuse, N. Y.
Jan. 9	Chicago	Chicago Bar Assn. Chicago, Ill.
Jan. 10	Empire State Metropolitan	Fraunces Tavern New York, N. Y.
Jan. 10	Lake States	Northland Hotel Green Bay, Wis.
Jan. 10	Pacific	Engineering Meeting Everett, Wash.
Jan. 12	Ohio	Legion Hall Middletown, Ohio
Jan. 12	Empire State Northern Dist.	Hotel Woodruff Watertown, N. Y.
Jan. 12	Kalamazoo Valley	Hotel Harris Kalamazoo, Mich.
Jan. 20	Empire State Eastern Dist.	Queensburg Hotel Glens Falls, N. Y.
Jan. 20	Lake Erie	Hotel Carter Cleveland, Ohio
Jan. 20-21	Southeastern	Francis Marion Hotel Charleston, S. C.
Jan. 26	Delaware Valley	Engineers Club Philadelphia, Pa.
Feb. 1	Empire State Western Dist.	Prospect House Niagara Falls, N. Y.
April 6	New England	Roger Smith Hotel Holyoke, Mass.

Michigan Supts. To Hear Corbin

W. S. Corbin, chief engineer, The Black-Clawson Co., Paper Machine Div., is to address the February 9 dinner meeting of the Michigan Division of The American Pulp and Paper Mill Superintendents Assn. His subject will be "Developments in Fourdrinier Design."

The meeting also will feature a panel discussion of "Experiences with Various Machine Modifications." The program, according to Vincent D. Redmond, Kalamazoo Paper Co., Kalamazoo, Mich., Secretary of the Division, will be of interest to superintendents, technical men, and executives who have a desire to keep abreast of the latest thinking in Fourdrinier machines.

Southon to Address Michigan Joint Meeting

Alfred Southon, Chairman of the Board, Kalamazoo Vegetable Parchment Co., Parchment, Kalamazoo, Mich., is to address the joint meeting of the Kalamazoo Section of TAPPI and the Michigan Division of The American Pulp and Paper Mill Superintendents Assn. on the evening of January 12.

Harry E. Hadley, The Gardner Board and Carton Co., Middletown, Ohio, immediate Past President of The American Pulp and Paper Mill Superintendents Assn., is to be toastmaster for the occasion.

The meeting will be held at Hotel Harris, Kalamazoo. Expectations are that some 450 to 500 papermakers will be on hand.

Meeting Plans for Northwestern Supts.

John McPherson, Mosinee Paper Mills Co., Mosinee, Wis., Chairman of the Northwestern Division of the American Pulp and Paper Mill Superintendents Assn., has announced plans for the meetings of the Northwestern Division for the 1956 season.

According to Mr. McPherson, the success of the two regional meetings of the Division last year, and of the fall meeting in Green Bay, has indicated that a continuation of such programming is desirable. To this end, he said, there will be three regional meetings (consisting of mill visits, a dinner, and an evening program) and a two-day fall meeting.

A regional meeting is planned for January 26 at Wisconsin Rapids, on March 22 at Appleton, and on May 17 at Rhinelander.

The two-day fall meeting will be held on September 21-22 at Wausau.

The first two meetings are being arranged by Cecil Parvin of Nekoosa-Edwards Paper Co., Port Edwards, Wis., and Arthur Bunks of Consolidated Water Power and Paper Co., Appleton, Wis.

PLANS FOR THE MAY E. J. ALBERT AWARD COMPETITION are being discussed at a recent meeting of the Delaware Valley Section of TAPPI by past winners of the plaque and the 1956 chairman. L-R: W. C. Marble, Philadelphia Electric Co.; P. A. Cerasoli, W. C. Hamilton & Sons; Dr. Frederic Dannerth, chairman and M. M. Muntz, P. H. Glatfelter Co. Named in honor of E. J. Albert, president of Thwing-Albert Instrument Co., the contest gives young men in the paper industry the opportunity to present papers on original work of a technical nature. The competition, now in its fifth year, will be judged by W. E. B. Baker, New York & Pennsylvania Co., William Louden, Paterson Parchment Paper Co., and Joseph J. Schwenkler, Container Corp. Committee members are A. L. M. Bixler, Riegel Paper Corp., William S. Bradford, E. W. Twitchell Inc., C. M. Conner, W. C. Hamilton & Sons, Philip A. Lamb, Endura Corp., John D. Lyall, Armstrong Cork Co., and Howard H. Street, National Vulcanized Fibre Co.

Southern Conservationists Will Meet Jan. 17-19

The annual meeting of the Southern Pulpwood Conservation Assn. will be held January 17-19 in Atlanta, Ga., at the Biltmore Hotel.

K. S. Trowbridge of the North Carolina Pulp Co., Plymouth, N.C., is president of the conservation association, and N. W. Sentell of the Southern Advance Bag and Paper Co., Division of Robert Gair, Hodge, La., is vice-president.

Registration will begin January 17 with the meeting begining at 1:00 p.m., a conservation foresters' meeting. On the afternoon program will be Jay Durham, WSB-TV; J. P. Harper, International Paper Co., Raleigh, N.C.; F. H. Martin, Arkansas State Forestry and Parks Commission, Little Rock, Ark.; and Bob Harrell, association publicity director, Atlanta, Ga. This phase of the program will be directed toward "Preparation and Presentation of a Forestry TV Program."

January 18 President Trowbridge will address the association at 10:00 a.m. He will be followed by Mr. Malsberger with the annual conservation report; Clint Davis, United States Forest Service, Washington, D.C., "Results of Southern Forest Fire Prevention Activities;" and Paul M. Dunn, St. Regis Paper Co., New York, "Organizing Fire Suppression Forces."

Beginning at 1:45 p.m., January 18, a panel discussion on "Coordinating Our Potential Fire Suppression Forces," will be held. On the panel will be President Trowbridge as moderator; Frank A. Albert of Atlanta and the U.S. Forest Service; F. H. Claridge, North Carolina State Forester, Raleigh; Guyton DeLoach, Director of the Georgia Forestry Commission; J. B. Lattay, Riegel Paper Corp., Bolton, N.C.; J. G. McGowin, W. T. Smith Lumber Co., Chapman, Ala.; and W. M. Oettmeier, Superior Pine Products Co., Fargo, Ga.

Lance Rumble, Toronto, Canada, and General Motors Corp., will be guest speaker January 18 at the 6:30 p.m. banquet. Lucian Whittle, Brunswick Pulp and Paper Co., Brunswick, Ga., will be master of ceremonies.

Penjerdel Announces Spring Meeting Plans

At a recent meeting in Philadelphia, the executive committee of the Pennsylvania-New Jersey-Delaware Division of the Superintendents Association blueprinted plans for its 1956 spring meeting. This meeting is scheduled to be held on April 20-21 at the Southern Hotel, Baltimore, Md. Registration for the meeting will begin on the afternoon of April 19.

The technical sessions will be scheduled for April 21. Recreational activities will include golf—also opportunities for indulging interests of many other kinds.

Cletus D. Coffman, Chesapeake Paper Board Co., chairman of the Division, heads up the steering committee. Along with him on that committee are Glen Renegar, Container Corp. of America, and Stanley B. Huss, F. C. Huyck & Sons. Mr. Coffman also has the responsibility of arranging for the mill visit, as well as that of serving as convention chairman.

Edwin H. Olmstead, Eaton-Dikeman Co., and John Verwayen, Gibraltar Corrugated Paper Co., are arranging for the technical program.

An outstanding social attraction will be the Maryland Shore dinner planned for the evening of April 20. All those who register for the Convention will be guests of the Division at the dinner.

Ohio TAPPI to Be Guests of Black-Clawson

The Black-Clawson Co., Hamilton, Ohio, will play host to Ohio TAPPI on January 12 the local TAPPI Section's regular January meeting date. Ohio TAPPI men will have a chance to visit the firm's Shartles Brothers Machine Division in Middletown and the Black-Clawson Machine Division in Hamilton. Trips through both plants will begin at 1:30 p.m. and will continue all afternoon.

C. R. Crawford, president of Black-Clawson Co., will address Ohio TAPPI on the evening of January 12, during its regular dinner meeting at the American Legion Hall in Middletown. Crawford's address will be on "New Developments In Paper Equipment Manufacture." A sound slide film on stock preparation and paper machinery and water clarification problems will follow.

Mr. Crawford has been a member of the Black-Clawson firm for the past 47 years. He started as an apprentice in the company's drafting room. Mr. Crawford was named president of the company in 1951.

A social hour will precede the dinner meeting at 6 p.m. Mr. Crawford's address is scheduled for 8 p.m.

Central Empire TAPPI to Hear Landberg on Color

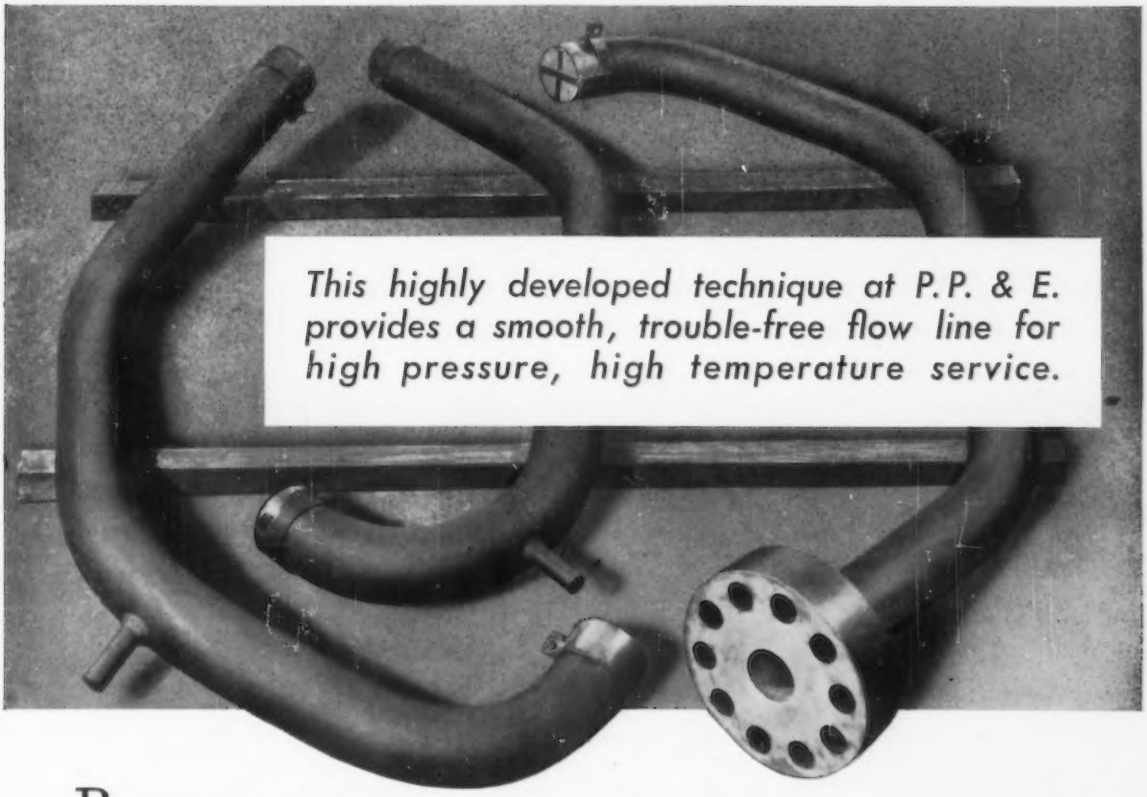
The January 6th meeting of the Central District of Empire State TAPPI Section will feature a paper on "Methods of Coloring Paper", by Maurice Landberg, General Dyestuff Corp.

The speech will be preceded by a social hour from 6-7 and a roast beef or crabmeat dinner. Meeting place is the University Club, Syracuse, N.Y.

Secretary of Commerce Rewards Carroll Wilson

Carroll L. Wilson, director of finance of the Champion Paper & Fibre Co. of Hamilton, has received a "certificate of service" from Commerce Secretary Sinclair Weeks for service abroad at foreign trade affairs.

Hot Bending at Pittsburgh Piping



This highly developed technique at P.P. & E. provides a smooth, trouble-free flow line for high pressure, high temperature service.

Bending heavy wall piping is an art which provides a pipe line having best flow characteristics, with turbulence held to a minimum.

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Comparatively few men are qualified by training, experience and skill to bend pipe for high pressure, high temperature service . . . fewer plants have the necessary facilities. P.P.&E. has both the men and facilities.

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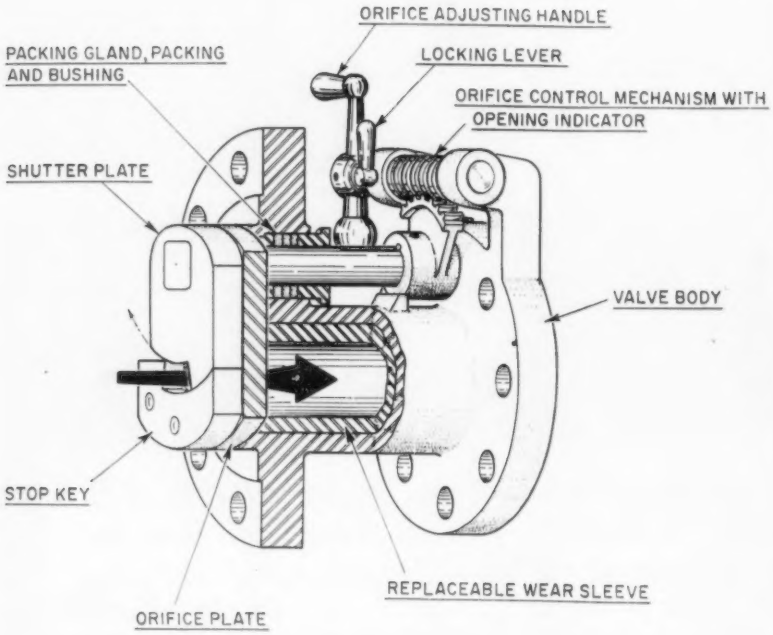
NEW EQUIPMENT AND SUPPLIES



Digester Valve Features Micrometer Control

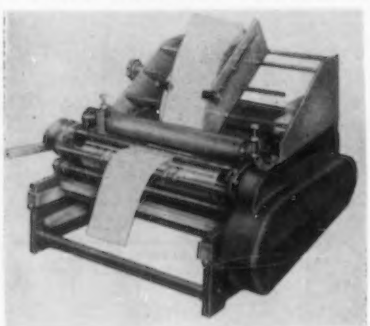
A digester blow valve, which features micrometer control of the orifice opening, has been developed by The Black-Clawson Co., Pandia Inc. Division, 250 Park Ave., New York, N. Y.

Designed primarily to operate in conjunction with a continuous discharge, the all-stainless steel valve is applicable to any process where it is necessary to discharge the stock from a high pressure digestion zone to atmosphere.

The area of discharge orifice is accurately and quickly adjusted by means of a worm gear and quadrant arrangement with locking lever mechanism, to maintain positive setting of the shutter plate. An orifice opening indicator facilitates accurate resetting of the shutter plate.

Called PANDIA Discharge Valve, the unit is precision built with a minimum of moving parts. The only portion of the unit subject to appreciable wear is a replaceable wear sleeve immediately following the adjustable valve opening.

Coater Features Friction Demand Feed

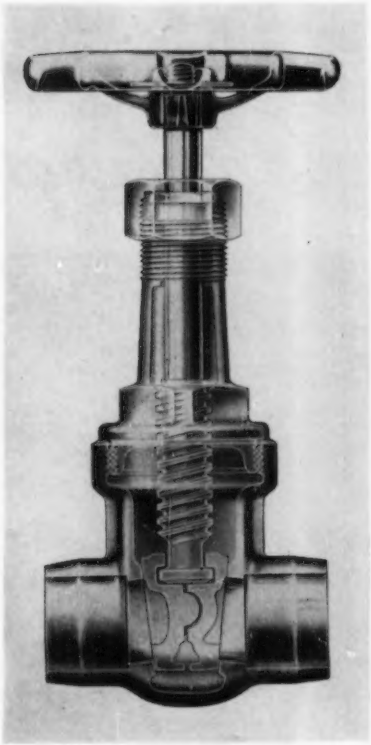


A new coating machine equipped with semi-automatic friction demand feed which handles a variety of coating jobs more efficiently than previous models is announced by Potdevin Machine Co., '85 North Street, Teterboro, N. J.

Called Model 2R, the machine coats all kinds of jobs from a one in. strip to an overall coat application. The unit will handle materials as thin as tissue paper and as heavy as index card.

Speed of delivery of coated materials is controlled by the operator. Some of the materials listed for the machine are glue, latex, varnish, resin, paint, and thermoplastics. A coating regulator dial controls the desired thickness.

The coating product is adjustable for various label sizes, and is obtainable in 6, 9, and 12 in. widths. Minimum label handled is 2 inches. Tank roller and tank are easily removable for simple, quick clean-up.



Remodeled Valves Are Versatile

A new line of bronze solder-end valves has been announced by the Lunkenheimer Co., P. O. Box 360, Cincinnati 14, Ohio.

Among the gate vales offered are rising stem with double-wedge disc, with solid-wedge disc, and non-rising stem with single-wedge disc. All three are rated at 125 lbs. steam pressure and 200 lbs. water, oil, or gas.

A bronze swing check valve with renewable disc and side plugs carries the same pressure ratings. The line is completed by a non-metallic-disc globe valve, rated at 150 lbs. steam and 300 lbs. water, oil, and gas.

The Solder End Valves embody features, such as non-slip handwheel, stem-alloy stem, hexagon head gland, back seats which permit repacking under pressure, leak resistant deep stuffing box and corrosion resistant close-grained bronze.

All valves are designed with plain ends for use with types K, L, and M copper tubing. Secure connections are made by a simple soldering operation which allows smooth full flow and compact assembly.

Ends are machined to assure proper flow of solder for a tight joint.

This is BLACK-CLAWSON

New Vacuum Pick-Up on Newsprint Machine

The predicted heavy increase in global newsprint production during the next ten years makes newsprint machine development extremely important.

Black-Clawson's Paper Machine division builds high-speed newsprint machines and components.

The new 290" Bagley-Sewall machine at United Paper Mills, Ltd., Finland, features this Vacuum Pick-Up Press Section and a Permanent Cantilever Fourdrinier. It is completely hydraulically controlled.

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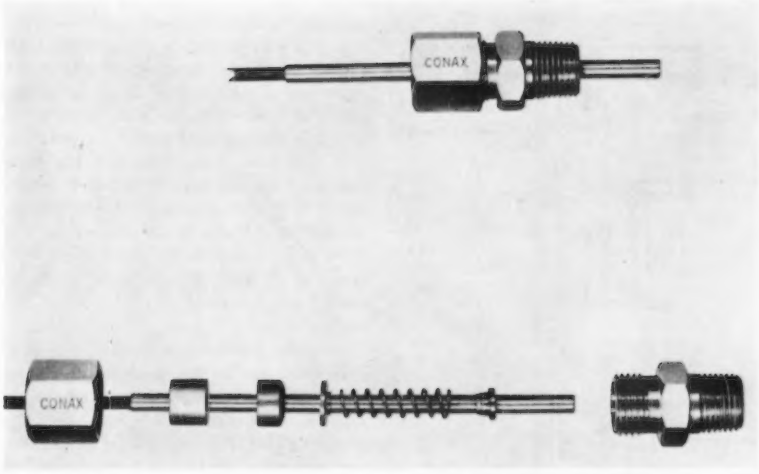


Thermocouples Are Designed for Fast Response

Announcement of a new pressure sealing pring loaded thermocouple is made by the Conax Corp., 7811 Sheridan Drive, Buffalo 21, N.Y.

The units are compact, self contained, and insure positive contact for high thermal conductivity. The items are used for checking bearing temperatures and other similar applications.

Fast response is insured by small ⅛ in. diameter two wire pyod construction. The sealing method incorporated eliminates entry of foreign matter into the system as well as sealing internal vacuum or pressure to 200 p.s.i.

Fittings and tubes are made of Type 303 stainless steel. Tubes are available in lengths to meet specific applications. The thermocouples are available with either iron-constantan or copper-constantan calibrations. Standard pipe thread connection is ⅛ in. i.p.s.

Hand Truck Has Pneumatic Tires

Introduction of a lightweight hand truck equipped with pneumatic tires is being made by The Hamilton Caster & Mfg. Co., 1700 Dixie Highway, Hamilton, Ohio.

Called Lite-N-Tuff hand truck, it is specially designed to reduce the effects of load jar on fragile cargo when moving over rough ground, jumping curbs, etc. The pneumatic tires serve to cushion the shock of impact, and also give added protection to floors and floor coverings. All trucks are capacity rated to carry 400 pounds, and are available in single and double-handle models. Other features include: welded-steel tubular construction; concave steel cross-straps; stair climbers; roller bearing wheels; and rubber handle grips. Tire sizes offered are 8 X 3.00-4 and 10 X 3.50-4; 4 ply casings with inner tubes.

Unitary Mechanical Seals Are One-Piece

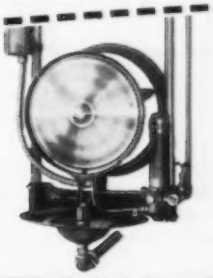
A redesigned series of unitary mechanical seals for use on process pumps, is announced by the Garlock Packing Co., Palmyra, N. Y.

The new design provides for a one-piece assembly, thus ensuring an entire unit, including sleeve and gland, ready for quick installation.

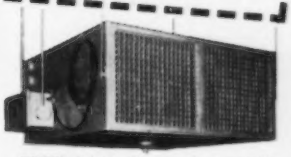
No on-the-job measurements or adjustments are necessary as the seal is pre-set at the factory, the manufacturer states. A collett-type drive is provided. There are

LOW-COST
UNIT HUMIDIFIERS
STOP
Dry Air Buckling, Curling, Wrinkling

Maintain uniformity, reduce spoilage, with automatic humidification in large or small areas. A size and capacity range for every plant, every need . . . at surprisingly low costs!



TYPE H: Ideal for small areas; evaporates up to 8 gph with ¼ hp motor.



TYPE BA-2: Extremely versatile for large areas; water or steam units; up to 30 gph each.

- Self-contained units
- No floor space required
- Trouble-free maintenance
- Fully automatic control
- Free, complete engineering service

FREE BOOKLET
Details on complete money-saving line of unit humidifiers . . . in free Catalog P-5.

Bahnson
COMPANY
WINSTON-SALEM, N. C.
AIR CONDITIONING•HUMIDIFICATION

no set screws to loosen which can corrode or damage shaft or shaft sleeve.

External lock and drive are readily accessible. Circulating connections in glands provide cool, clean lubrication which adds to seal life. All sealing surfaces are precision lapped and all high pressure seals are factory balanced.

The seal products are used for use on rotary shafts of boiler feed pumps, chemical pumps, oil pumps, digester circulating and other process pumps.

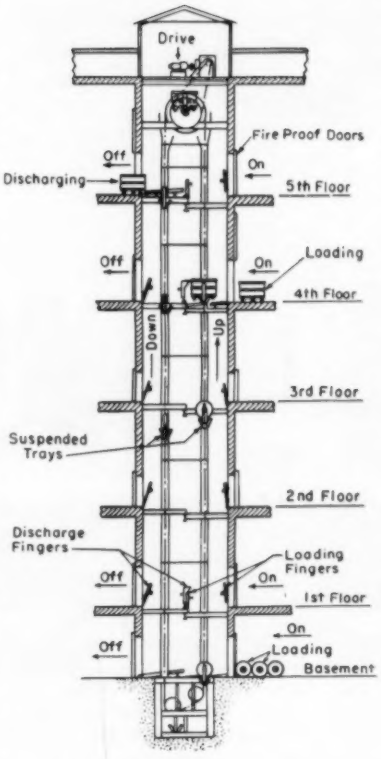
Conveyor Speeds Warehousing Operations

A fast tray-type interfloor conveyor that automatically loads, transfers and delivers heavy loads between as many as six floors was announced by Gifford-Wood Co., Hudson, N. Y.

The automatic conveyor performs long transfer jobs between floors and moves loads twice as fast as other conveying methods.

The unit is designed for use in warehouses and other installations where long interfloor transfer hauls of heavy loads present handling and cost problems.

Resembling an elongated ferris wheel in its transfer sequence, the fully automatic system consists of: a tray-type elevator conveyor, with trays spaced 25 ft. apart between two parallel roller



chains; loading and unloading entrances at each floor, on opposite sides of the conveyor shaft; safety fire doors, side-sliding or up-sliding, at each entrance; automatic loading and unloading "fingers" at each station; and a complete set of operating and safety controls.

In operation, trays pick up loads from entrances on one side of the shaft, carry them over the top and down to the predetermined discharge station on the other side of the shaft. Trays move at a speed of 48 fpm., driven by a hydraulic electric unit housed at the top of the shaft.

In order for the conveyor to operate, only one door on the load side and one on the unload side may be open. When ready to start transfer sequence, operator at the unload station pushes a signal button indicating that unload fingers are in receiving position.

At the loading station the operator pushes the Start button, which moves the conveyor tray into loading position. Loading fingers automatically move the load onto the tray. The loaded tray then moves up the shaft, over a series of chain sprockets at the top of the shaft and down the other side.

Unload fingers at delivery point are in receiving or down position; all unload fingers at other floors must be in up position. Load is removed from tray and deposited on platform at designated unload station. An electric eye mechanism at each unload station prevents pileup of loads at platform; if passage is blocked by other loads, the electric eye stops the movement of the elevator and prevents unload until passage is cleared.

Push button stations at each operating floor are equipped with Start buttons, red pilot light and indicator lights showing the position of unload fingers at each floor. An emergency safe-run switch at each floor can stop the entire transfer sequence at any point.

Limit switches are installed on doors at each loading point and on loading fingers to insure exact loading and smooth transfer sequence.

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mills Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

Associated with

William H. Byrne P. E.

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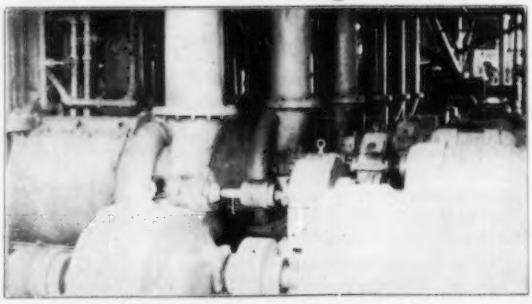
REPORTS APRAISALS ESTIMATES AND SURVEYS

Three APMEWS are Replacing a Big Room Full of Flat Screens at Groveton Paper Mill

"Apmew centrifugal pulp cleaners & screens have now been installed and are working very satisfactorily." Centrifugally cleaner, more salable paper is being produced for big profits.

Occupy 10 feet by 30 feet—SAVE 81 feet by 96 feet



APMEW, Inc., P. O. Box 1, Glens Falls, N. Y.

Moacanin Gets Hooker Fellowship

Jovan Moacanin, a graduate student at the University of Washington, has been awarded a $2000 Hooker Electrochemical Co. fellowship in chemical engineering.

Mr. Moacanin, 29, is working towards his doctor's degree. He is currently doing research on the chemistry and uses of lignins and other waste products of the sulphite paper industry.

A native of Yugoslavia, Mr. Moacanin came to the United States in 1948. He is now an American citizen. He studied for a year in New York, and since that time has studied at the University.

PRICES OF MATERIALS

Aluminum sulphate:		
cml. bags, c.l. wks. .....cwt.	$1.85	/ —
iron-free, c.l. wks. .....cwt.	3.55	/ —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)...	27.00	/30.00
Arg. ex. dock, duty paid.....	28.00	/28.50
New Zeal., do.	26.50	/27.50
Caustic soda:		
c.l. wks. solid, 76%.. ...cwt.	4.50	/ —
flak. & grd. 400-lb. drums, c.l.	4.50	/ —
liquid 50% tanks ..	2.80	/ —
liquid 70% tanks....	2.90	/ —
China clay:		
dom. air-float, c.l. wks. ..ton	10.00	
water-washed, lump, filler..ton	11.00	
coating .....ton	17.60	/40.00
Imported, ex. ship..short tons	20.00	/35.00
Chlorine:		
single-unit tanks, works..cwt.	.3.05	/ —
multiple unit, 2-5 cars per yr.	3.92	/ 5.12
Formaldehyde:		
USP, inh. dms. c.l. wks..lbs.	.0675/	—
lcl., E. wks. .....lb.	.072	/.0725
Lime:		
hydrated bags, wks.....tons	18.71	/20.21
Gum rosin:		
K, M, N, drms, c.l. Savan, cwt.	8.48	/ 8.90
Rosin size:		
70%, gum & pale grds., tank cars, south, sh. pt..... cwt.	7.24	/ 7.28
Salt cake:		
dom. bulk, 100% anh. wks. ton	28.00	/ —
imp. f.o.b. Saskatchewan..ton	18.00	/ {Cana. funds
Soda ash:		
light, 58%, bags, wks.....cwt.	1.80	/ —
bulk .....cwt.	1.50	/ —
Sodium silicate, 40° Be.:		
tank-cars, wks.....cwt.	1.00	/ —
drums, c.l. wks.....cwt.	1.35	/ —
(47°) Be. WW.		
tank-cars, wks.....cwt.	1.60	/ —
drums, c.l. wks.....cwt.	1.95	/ —
Sodium peroxide:		
dms. c.l. E. of Miss. .....lb.	.186	
l.c.l. do. .....lb.	.191	/ .196
Soybean, protein:		
chem. isol., wks. c.l. bags...lb.	.23	/ —
Sulphuric acid:		
60° Be. cbys. c.l. wks....cwt.	2.00	/ —
l.c.l. wks.....cwt.	2.45	/ —
tank-cars, wks.....ton	18.60	/ —
Sulphur:		
crude, c.l. mines, contract, long ton	26.50	/ —
f.o.b. vessels Gulf.....do.	31.00	/33.00
Sulphur dioxide:		
liquid, coml. cyl., wks.....lb.	.10	/ .12
multi-unit cars .....lb.	.0535/	
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl .....cwt.	7.13	/ —
white, dextrins .....cwt.	7.55	/ 7.80
chlorinated .....cwt.	8.15	/ —
potato, Idaho, c.l. wks....cwt.	6.75	/ —
East, fr. all. 50 cents cwt.		
potato, Maine, f.o.b. wks. cwt.	5.75	/ —
Talc:		
domestic, sacks, c.l. wks., N.Y. .....ton	27.00	/32.00
Titanium dioxide:		
anatase, c.l. deld. E, bags..lb.	.22½/	—
l.c.l. deld .....lb.	.23½/	—
rutile, c.l. deld. .....lb.	.24½/	—
l.c.l. deld. .....lb.	.25½/	—

PRICES OF FIBERS

MARKET WOOD PULP

First Quarter Contract Prices Per Short Air-Dry Ton

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$$83.00/ 86.00‡	$$83.00/ 88.00§	$$77.50/ 90.00
Kraft, Blchd.	147.00/152.00	150.00/155.00	$147.50/150.00§		$150.00/ —
Kraft, Blchd. Hdwd.	145.00/ —		$137.50/ —		
Kraft, Semi-bleached	135.00/140.00	135.00/140.00	$137.50/140.00§	*140.00/ —	
Kraft, Unbl.	115.50/125.00*	115.00/125.00	†120.00/130.00	120.00/145.00	
Sulphite, Blchd. ..	145.00/150.00	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd. .	125.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	145.00/ —	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis

PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.25/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.50
Blchd. & Unblchd. Underwears....	17.00/ 17.50
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.75/ 6.25
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.50
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	27.00/ —

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	Dec. 13 Per 100 lbs.
Grade 1 n.a.	
2	$9.10/ $7.70
3 1st cut—felting	7.00/ 5.80
4	5.25/ 4.20
5	3.75/ 3.05
6	2.65/ 2.50
7	2.50/ —

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Foreign Scrap Burlap	5.00/ 5.25
Heavy Wool Tares	6.50/ —
Austr. Wool Pouches	4.75/ 5.25
Domestic Manila Rope	5.50/ 5.75
Domestic No. 1 Sisal Strings	5.00/ 5.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York Dec. 26	Boston Dec. 26	Chicago Dec. 26	Los Angeles Dec. 26
No. 1 Mixed Paper	$16.00/ 18.00	18.00/ —	17.00/ —	14.00/ —
No. 1 News	25.00/ —	22.00/ 23.00	25.00/ —	14.00/ —
Overissue News	25.00/ 27.00	22.00/ 24.00	30.00/ —	14.00/ —
Mill Wrappers	25.00/ 28.00	22.00/ —	20.00/ —	14.00/ —
Old Corrugated Containers	24.00/ 27.00	23.00/ 24.00	30.00/ —	19.00/ —
Super Resorted Kraft Paper ...	40.00/ 50.00	45.00/ 50.00	40.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	40.00/ 42.50	40.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 52.50	45.00/ 52.50	45.00/ 52.50	— / —
New 100% Kraft Corr. Cuts ...	55.00/ 65.00	55.00/ 65.00	75.00/ —	45.00/ —
New Br. Kraft Env. Cuts	85.00/ 95.00	85.00/ 95.00	80.00/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	60.00/ 70.00	60.00/ 65.00	70.00/ —	50.00/ —
New Br. Kr. Bag Waste Unprrtd	65.00/ 75.00	80.00/ 85.00	85.00/ —	— / —
No. 1 Groundwood Shvs.	35.00/ 45.00	30.00/ 35.00	40.00/ —	27.00/ 30.00
White Newsblanks	75.00/ 80.00	63.00/ 70.00	60.00/ —	65.00/ —
No. 1 Soft White Shvs.	80.00/ 85.00	80.00/ 85.00	75.00/ —	— / —
Hd. Wht. Shvs.	110.00/115.00	110.00/ —	115.00/ —	95.00/ —
Hd. Wht. Env. Cuts	135.00/145.00	130.00/140.00	115.00/ —	110.00/ —
Col. Tab. Cards	70.00/ 75.00	75.00/ 77.00	65.00/ —	44.00/ —
Manila Tab. Cards, bales	95.00/100.00	95.00/103.00	90.00/ —	79.00/ —
No. 1 Col. Ledger	45.00/ 50.00	45.00/ 50.00	50.00/ —	35.00/ —
White Ledger	65.00/ 75.00	70.00/ 75.00	70.00/ —	55.00/ —
Mixed Book & Mag.†	28.00/ 30.00	30.00/ —	22.50/ —	— / —
No. 1 Rep'd. Hvy. Books‡	32.00/ 35.00	33.00/ 35.00	35.00/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡Not to exceed 10% groundwood. § Deld.

PEOPLE

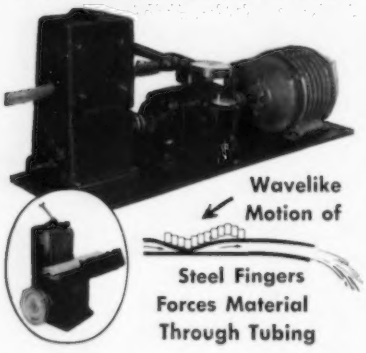
Shepherd Leaves Sales Post With Peninsular

J. D. Shepherd has resigned his position as sales manager for Peninsular Paper Co., Ypsilanti, Mich. He will assume the job of general sales manager at Newhouse Paper Co., Minneapolis, Minn.

Mr. Shepherd had been sales head at Peninsular for the past six years, having joined that firm in 1934. At Newhouse, he replaces John J. Knip, who has requested being relieved of the extra responsibilities of general sales manager to resume full time selling of the fine printing papers handled by the merchandizing firm.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

PUMP
Liquids • Gases • Slurries
WITHOUT CORROSION OR CONTAMINATION



Prices range from ..... $55 to $500
depending on size of pump and accessory equipment required.

Write for Catalog
SIGMAMOTOR Inc.
35 North Main Street Middleport, N. Y.

James Thompson

Paul Yingst

Anthony Tseng

Gardner Promotions

The Gardner Board and Carton Co., Middletown, Ohio, has promoted James Thompson and Paul Yingst to staff assistants, general management.

Mr. Thompson has been supervisor of cost analysis since last August. He joined Gardner in January, 1950, as a management trainee in accounting. For several months in 1951 he was on special assignment to Dairypak Inc., Cleveland, a subsidiary Gardner owns jointly with The Champion Paper and Fibre Co. In 1952 he became staff assistant, finance, and in 1954 a production cost analyst.

Mr. Yingst joined Gardner in 1953 as an electrical engineer and became a senior project engineer in 1954.

Anthony Tseng has been promoted to the position of director, industrial engineering. Mr. Tseng, who has been supervisor, methods engineering, since 1954, joined Gardner in 1952 as a senior industrial engineer.

Before joining Gardner he was a management trainee at the Delco Appliance Division, General Motors, and also worked for M. E. Mandel and Associates, consultant, Lafayette, and The Belden Manufacturing Co., Richmond, Ind.

Downing Box Elects Directors

D. P. Bowen has been named a director and vice-president and manager of the Cedar Rapids, Iowa plant by the Downing Box Co., Milwaukee. Also elected a director was Lynford Lardner, a Milwaukee attorney.

Re-elected directors were R. D. Christy, R. H. Christy, J. A. Daggett, G. B. Downing and A. F. Fenzel. Mr. Downing is president, R. H. Christy is vice-president and secretary and Mr. Fenzel is treasurer and assistant secretary.

Chiuminatto Named Treas. Of Sulphite Products

Peter M. Chiuminatto, secretary-treasurer of Charmin Paper Mills, Inc., Green Bay, Wis., was recently elected treasurer of Sulphite Products Corp. and Sulphite Pulp Manufacturer's Research League.

Mr. Chiuminatto succeeds Cola Parker, president of the National Assn. of Manufacturers and former Chairman of the board of directors of Kimberly-Clark Corp. of Neenah, Wis.

Butler Resigns From Sherman

Jack S. Butler has resigned from Sherman Paper Products Corp. effective December 31, 1955.

For the past four and a half years he has been manager of the Chicago operations for Sherman. The Chicago plant and operations services twenty-two states. Prior to that he was associated with the Gummed Products Corp. both in Troy, Ohio and Chicago, Ill., for ten years.

At the present time, he has no definite plans other than a vacation in Florida with his family.

Bergstrom Promotes Two

Maurice Larson has been promoted from assistant superintendent to mill superintendent by the Bergstrom Paper Co., Neenah, Wis. Richard Peterson has been named assistant superintendent.

Bemis Bag Names Eckers to Sales Post

Bemis Brothers Bag Co. has appointed Stewart Eckers to be in charge of their Baltimore, Md. sales operation. The company has its general offices in St. Louis, Mo.

Andrus Receives Rayonier Fellowship

The $2,500 Rayonier Fellowship at the University of Washington has been awarded to Grant Merrill Andrus, a candidate for a doctor of philosophy degree in chemistry.

The Rayonier Fellowship is the largest awarded in the Chemistry Department.

Mr. Andrus will use the fellowship to continue his research in the structure of lignin, which is the subject of his doctorate dissertation.

Mead Appoints Traffic Mgrs.

L. R. Steinbach has been appointed general traffic manager of The Mead Corp., Dayton, Ohio, and its affiliates. F. F. Kator will continue service with the corporation and will be assigned to special duties at his request, under the title of associate general traffic manager.

W. C. Anderson and C. L. Crandall have been appointed assistant traffic managers in charge of rates and service. Traffic headquarters will continue to be in the head office of the corporation at Dayton.

Butler Named Safety Dir. Of Ohio Boxboard

Glen L. Butler, Jr., has been named director of safety and security for The Ohio Boxboard Co.

Mr. Butler comes to Ohio Boxboard from the Ford Motor Co.'s Brookpark plant at Cleveland, where he has been safety engineer the past two years. Prior to his association with Ford, he was Safety Engineer for the Cadillac Tank Plant, Cleveland.

Milson Named V.-P. Of F. N. Burt Co.

William C. Milson has been appointed vice-president of the F. N. Burt Co. Inc., display and container firm, of Buffalo, N. Y. He will be succeeded as general manager by Raymond J. Lowe.

Mr. Milson has been with F. N. Burt 34 years and has been its general manager since 1948. Mr. Lowe has been with the company 36 years and has been assistant general manager since 1948.

The company also announced the appointment of Ralph W. Seiler as comptroller. Mr. Lowe previously was comptroller as well as assistant general manager. Mr. Seiler has been assistant comptroller.

E. G. Swigert

President of Hyster Named National V.-P. of N.A.M.

Ernest G. Swigert, president of Hyster Co., has been elected national vice-president of the National Assn. of Manufacturers.

Mr. Swigert has served on NAM's board of directors for a number of years and during 1955 served as regional vice-president of the organization. In being elected number-two man in the NAM, Mr. Swigert becomes the first industrialist from the Northwest to hold such a high post in the 20,000 member association.

Robert Gair Co. Elects Hugh Laughlin a Director

Hugh C. Laughlin, executive vice-president and a director of Owens-Illinois Glass Co., Inc., has been elected a director of the Robert Gair Co., Inc., manufacturers of paperboard and paper products. Mr. Laughlin replaces William E. Levis, a director of Owens-Illinois, who resigned from the Gair Co. board.

Lefebvre Leaves Personal Products for Howard Smith

Albert Lefebvre, for ten years paper mill superintendent for Personal Products Corp., is now assistant production manager at the Crabtree Mills division of Howard Smith Paper Mills Ltd. in Joliette County, Quebec.

During his years with Personal Products, Mr. Lefebvre was superintendent at the firm's Milltown, N.J. mill.

Ennis Named Eastern Sales Mgr. of Paterson Parchment

Paterson Parchment Paper Co., Bristol, Pa., has appointed Robert E. Ennis as eastern sales manager. His headquarters will be in New York City at 122 East 42nd St. Mr. Ennis has been with Paterson since 1951.

Convert Logs into HIGH-QUALITY CHIPS

with Carthage Log Barkers, Log Splitters, Log Chippers, Slab Chippers, Chip Screens

For Example:

CARTHAGE HYDRAULIC LOG SPLITTER quarters the log with one stroke — and ejects the log so that the machine is always clear for incoming logs. Simple, heavy-duty hydraulic controls with full safety features. Complete range of sizes for logs to 38" diameter and 6'6" length.

Write for Complete Information

CARTHAGE MACHINE COMPANY CARTHAGE, NEW YORK

PAPER TRADE JOURNAL / CLEARING HOUSE

Help Wanted

CONFIDENTIAL EMPLOYMENT SERVICE

We will welcome an opportunity to be of service, if you are available for a position in paper or pulp manufacturing or paper converting. SEND US YOUR RESUME. Many attractive positions at excellent salaries are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St. Liberty 2-6547 Boston 8, Mass.
J-2

PAPER MILL SUPERINTENDENT

for mill in eastern United States manufacturing sanitary paper products. Experience in de-inking process required. Only applicants with successful record in production and handling of personnel will be considered. Excellent opportunity. In first letter give complete resume of experience, age, education and desired salary. Address Box 56-7 care Paper Trade Journal.
J-2

C H E M I S T
CHEMICAL ENGINEERS

Unusual opportunity for a recent graduate in Chemistry or Chemical Engineering with some experience in paper research or paper mill quality control. Position is in the Chicago Research & Development Department of a nationally known manufacturer of paper. In replying, state age, education, experience, and salary desired. Address Box 523 care Paper Trade Journal. J-2

ASSISTANT TO PLANT MANAGER

Mechanical engineering background. Should have worked with paper in packaging, paper cups, spiral or convolute containers, or in allied manufacturing. Box #50-4 care Paper Trade Journal.
J-2

WANTED
PAPER MILL SUPERINTENDENT
POWER PLANT ENGINEER
For New Kraft Pulp and Paper Mill In Central American Republic

Very experienced men thoroughly familiar with modern high speed Fourdrinier Paper Machines and Kraft Pulp and Paper Mill equipment, over 45 years of age, in good health preferred.
Please be sure to give complete resume of background including Birthplace, Age, Education, Experience and Salary Desired.
Excellent opportunity for older men desiring ideal climate, environment and low cost living conditions. Address Box 56-8 care Paper Trade Journal.
J-16

Buy U.S. Savings Bonds

Help Wanted

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping lay-out systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland OAM

MECHANICAL ENGINEER

Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large expanding and progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience. Send resume to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland OAM

MECHANICAL ENGINEER

Pulp and paper mill machinery manufacturer requires a mechanical design engineer. Minimum requirements: twelve (12) years heavy mechanical equipment design experience of which five (5) should be in pulp and paper mill machinery and/or pulp and paper mill engineering. Attractive position open to qualified person. Address Box 55-443 care Paper Trade Journal.
TF

WANTED—TOUR BOSS for night work on Fourdrinier Board Specialties, Metropolitan New York Area. All benefits. Send resume and salary expected first letter to Box 55-329 care Paper Trade Journal. TF

Help Wanted

PAPER BROKER SALESMEN WANTED

WE WANT MEN EXPERIENCED AT BUYING AND SELLING THEIR OWN TONNAGE. THESE MEN CAN ESTABLISH AND OPERATE SALES OFFICES IN PRINCIPAL CITIES OR WORK FROM HOME OFFICE. EXCELLENT FUTURE WITH GROWING CO. REPLY CONFID. BOX 55-438 CARE PAPER TRADE JOURNAL. TF

POSITIONS FOR PAPER EXECUTIVES

The nation's largest executive placement agency has an exclusive department for the nationwide placement of successful engineers, technical men and salesmen in the paper industry. Immediate openings in all parts of the country for men under 48 earning over $7,000. Write to R. Graebner, Graebner Executive Exchange, 116 S. Michigan, Chicago, Illinois.
(not displayed) J-2

SALES ENGINEERS

A well-established machinery company needs additional sales engineers. Expanding products and markets offer excellent opportunities to a progressive, hardworking salesman. Income and benefits above average. Send resume to Box 55-447 care of Paper Trade Journal.
J-2

WANTED — Capable pulp technician for demonstration sulphite and other pulp process operations. One man based Wisconsin, another based in Northeast. Address Box 56-2 care Paper Trade Journal. J-9

TOUR FOREMAN—Age 25 to 40—for progressive Midwest paperboard mill producing 500 tons folding, test liner and specialty grades daily. In reply state age, paper mill experience and qualifications to Box 55-446 care Paper Trade Journal. J-16

IF YOU HAVE SURPLUS MACHINERY FOR SALE

YOU COULD SIGN AN EXCLUSIVE SALES AGREEMENT WITH ONE DEALER—but hardly any dealer is getting away with that old trick anymore.

YOU COULD SHIP IT TO A DEALER ON CONSIGNMENT—but that went out of style with the Model T.

YOU COULD OFFER YOUR MACHINERY TO ALL DEALERS TO BE SOLD ON A COMMISSION BASIS—and then keep your fingers crossed that two or more dealers don't claim the same customer.

YOU COULD MAKE AN OUTRIGHT SALE TO A CASH PURCHASER—the logical, profitable and proven method. It results in immediate disposal and removal from your mill.

YOUR GUARANTEED
CASH MARKET FOR SURPLUS MACHINERY

ROSS PAPER MACHINERY CO.
265 PASSAIC ST., NEWARK 4, NEW JERSEY
Telephone:—HUmboldt 2-2177

ROSS PAPER MACHINERY COMPANY

CABLE ADDRESS
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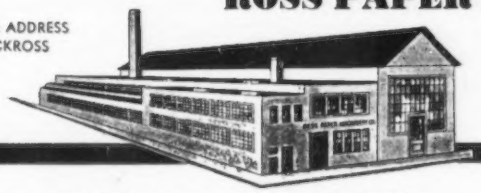

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BUY WITH CONFIDENCE — RPM SINCE 1919 — SELL WITH CONFIDENCE

USED PAPER MAKING & CONVERTING MACHINERY

Humboldt 2-2177

IMMEDIATE DELIVERY FROM AMERICA'S LARGEST INVENTORY OF PAPER MACHINERY

BALERS

1—Buffalo Baling Press—upstroke.

BEATERS

1—Dilts high speed iron tub. Roll 62" dia. x 54" face with 75 HP motor & controls.

CYLINDER MOULDS

3—136" face x 54" diameter—stainless steel covering—with 2 iron end vats.

CALENDER ROLLS

46—Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS

1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Black Clawson 82" 3 roll with doctors.
1—Black Clawson 82" 5 roll with doctors.
1—Farrel Birmingham 124"—9 roll stack—water cooled bearings.
1—Sandy Hill 84" 7 roll, with doctors.

DRIVES

3—Reeves #2F, #3 and #6.
8—Enclosed drives—various sizes.

DRYERS

7—43" face & 36" dia.—frames, gears & bearings.
4—52" face x 48" diameter—gears & bearings.
1—52" face x 24" diameter—gears and bearings.
23—84" face x 36" diameter, with gears.
1—88" face x 36" diameter.
1—104" face x 36" diameter.
1—104" face x 48" diameter.
10—109" face x 42" diameter.
1—110" face x 42" diameter, with bearings.
1—116" face x 36" diameter.
1—116" face x 48" diameter.
15—120" face x 48" diameter with gears, bearings and felt rolls.
1—124" face x 48" diameter.
1—126" face x 48" diameter.
13—127" face x 42" diameter.
1—130" face x 48" diameter.
9—160" face x 36" diameter, gears & bearings.
48—160" face x 48" diameter. Complete dryer section including felt dryers, felt rolls, etc.
36—132" face x 42" diameter with gears, bearings and frames.
18—58" face x 36" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
23—80" face x 36" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
64—46" face x 24" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
24—46" face x 48" diameter. Complete with gears, bearings, steam joints and felt equipment.
4—90" face x 36" diameter, anti friction bearings.

FLAT SCREENS

3—8 plate Sandy Hill roller shoe with scrapers.
2—8 plate Bagley & Sewall with scrapers.
2—12 plate Sandy Hill, anti friction bearings.

JORDANS

1—E. D. Jones pony Jordans 3/16" stainless steel fillings.
1—E. D. Jones Pony Jordan, ball bearing, with stainless steel filling.
1—Smith & Winchester standard with granite filling.
1—Noble & Wood Bull Dog Jordan. Anti friction bearings with coupling and motor base.
1—Appleton #2—anti friction bearings.
2—E. D. Jones Standard Jordans—anti friction bearings.

KNIFE GRINDERS

1—132" Rogers with motor. Used 5 months.
1—130" Hanchett belt driven complete with coolant pump, and 2 spare wheels.
1—92" Seybold with motor.

LABORATORY EQUIPMENT

1—5 lb. Wood Tub Beater—Complete.
1—Biggs 6' diameter Rotary Digester 100# pressure.

MOTORS

12—125 H.P. Westinghouse synchronous enclosed, Brand new. 440 volt, 720 rpm forced air ventilation with starters.
1—Westinghouse 300 h.p., 388 r.p.m., 440 v., 3 phase, 60 cycle.

PASTING MACHINE

1—80" Pasting Machine, 2 unwind stands, 84" Hudson Sharp 3 roll paster (New 1946). Drying table, dryer section. Complete 23 dryers, 6 roll calender stacks, reel, rewinder.

PULP EQUIPMENT

3—2 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—3 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—Lannoye Pulper—enclosed drive.

PULP PRESSES

1—Hydraulic Machine Co. 250 tons 30" x 36" platen, 48" daylight, 30" stroke, 16" ram —upstroke. For baling dry pulp.

PUMPS

44—Centrifugal Pumps open & closed impellers.

REELS

1—Pusey & Jones 162" drum reel.
1—Downingtown 104" 2 bowl reel.

REFINERS

1—Dilts Hydrafiner.
1—24" Weiner Refiner—ball bearing.
2—34" Sutherland Disc Refiner, stainless steel discs.

ROLL GRINDERS

1—Lobdell Model 3MB for 30# diameter rolls —19 ft. 6" bed. Complete with crowning device and 15 h.p. main motor drive and 2 10 h.p. motor grinder wheel drives.

ROLLS—PRESS, COUCH, etc.

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS

1—#2 Bird—Copper vat.
2—Bird #3A—Monel Vats.
9—Bird #2A with copper vats.
1—Bird #3A—copper vat—2 motors.

SAVEALLS

1—Shartle cylinder 36" dia. x 122" face with 5 HP motor & enclosed drive.

SHEETERS

1—Cameron 124" quick change double slitter assembly for board sheeters. Complete with 16 pneumatic slitters.
1—Moore & White simplex 114" sheeter with Maxson Layboy, overlapping delivery, 8 roll backstand motor and starter.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 81" duplex with Erie Layboy 12 roll backstand and motor.
1—Hamblet 75" with layboy and backstands.
1—60" Hamblet.
2—Hamblet 110" single knife sheeters.
1—Beck 45" sheeter.

SHREDDERS

2—Mitts & Merrill Air Fluff Paper Shredder. Used 9 months.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders, Style 36.

SLITTERS AND WINDERS

1—Cameron 82" Model 10-5. 30" rewind. Equipped with shear cut slitters.
1—Dietz 81" Parent roll backstand—with automatic tensioning device.
1—Cameron 42" Model 6.
2—Cameron 165" Model 18—Complete with motor drive and roll ejector.
1—Cameron 194" Model 19. Anti-friction bearings, 2800 f.p.m., equipped with air operated quick change, constant tension and roll ejector.
1—Moore & White 66"—two drum.
3—Essex 42" center wind—30" duplex rewind. Anti friction bearing equipped.

STOCK PUMPS

1—Shartle 10 x 20 single plunger pump.
1—Moore & White 10 x 16 Triplex.
1—Beloit 8 x 10 Triplex.
1—Downingtown 8 x 18 triplex, with enclosed drives and motor.

SUCTION COUCH ROLLS

2—Beloit 25" diameter x 114" face, anti friction bearings, with stands. Direct drive.
1—Sandusky suction couch 25" diameter x 128" drilled face.
1—Sandusky suction couch 18" diameter x 122" drilled face.
1—Sandusky 30" diameter x 162" drilled face complete Trunnion Roller Bearing.
1—Sandusky 22" diameter x 135" drilled face trunnion roller bearings.
1—Sandusky 18" diameter x 113" drilled face.

SUCTION PRESS ROLLS

1—Beloit 113" drilled face x 22" diameter—anti friction bearings.

SUPERCALENDERS

1—Norwood 30" 5 roll, complete with motor drive.

TISSUE AND TOWELING MACHINE

1—B & S 90" single cylinder machine. Complete including pumps, piping, valves, enclosed drive and VS motor drive. Full details on request.

TRIMMERS POWER BACK GAUGES

1—Seybold 94" Model 15 ZJ.
1—Seybold 64" Model 12-Z.
1—Seybold 56" Dayton—10 knives.
1—Seybold 84" Dayton with motor and spare knives.
1—Seybold 74"—Model 8ZG with motor.

VACUUM PUMPS

1—Nash H-3 with 5 h.p. motor.
3—Nash H-4.
1—Nash L-3 with totally enclosed 5 h.p. motor.
1—Nash L-5.

VOITH INLETS

1—New Valley Iron Works 153" x 36" monel lined inlet and head box.
2—Valley Iron Voith Inlets, adjustable 83" to 86"—Brass lip, stainless steel apron.
1—Valley Iron Works—for 113" wire with wooden head box.
1—Valley Iron Works 151" stainless steel inlet and head box.
1—Bagley & Sewall 144" stainless steel clad high speed inlet and headbox.

VORTRAPS

7—Nichols 4" stainless steel Vortraps—rubber lined heads.

WET MACHINES

1—Rogers 72" x 48" Wet Machine. Double press sections.

YANKEE DRYERS

1—10 ft. diameter x 132" face with bearings
1—Beloit 12 ft. diameter x 140" face—75 lb. steam pressure.

Help Wanted

HEATING & VENTILATING ENGINEER
Graduate Engineer experienced in all phases of paper mill heating and ventilating air conditioning and refrigeration for large expanding and progressive mill in Maryland. Under 35 years of age, good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland OAM

RESEARCH PHYSICIST

B.S. degree in Physics to assist in design of new instruments and testing equipment and to evaluate preliminary models for performance and final design purposes. Age 25-35. Good salary, usual benefits. Send resume to Personnel Manager, West Virginia Pulp and Paper Co., Luke, Md. TF

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered: present position protected. Ask for particulars. R. W. BIXBY, INC., 563 Brisbane Bldg., Buffalo 3, N. Y. J-2

Situations Wanted

PRODUCTION EXECUTIVE—Conversion of papers and boards, seeks progressive organization needing man with outstanding ability in all phases of manufacturing; organization; expansion and labor relations. Allied lines. Currently employed. Address Box 56-5 care Paper Trade Journal. J-30

SUPERINTENDENT—Available January 1st. Competent in production of high quality, at low cost, folding boxboard, food containers, set up boxboard and most other cylinder specialties, from waste papers and virgin pulps. Experienced in every phase of operation and maintenance single or multiple machine mill. Excellent references. Address Box 55-442 care Paper Trade Journal. J-16

AMBITIOUS DUTCHMAN, 29, with sound knowledge of the paper trade in Malaya and Indonesia, English and Malay speaking with knowledge of German and French, seeks position with mill or export organization preferable for overseas markets. Address Box 56-6 care Paper Trade Journal. J-2

For Sale

FOR SALE

72" Hamblet Sheeter.
96" Moore & White Sheeter, 8-roll Backstand and Layboy.
36" Waldron 2-Drum Rewinder.
50" Cameron Type 6 Slitter.
48" Kidder Slitter, two rewind shafts.
48" Maxson Layboy and Sheet Counter.
44" Seybold 10-Z Ream Cutter.
57" Dexter Power Cutter.
20 New Fast Flexible Couplings for 2", 2½" & 3½" shafts.

Thomas W. Hall Co.
Stamford, Conn. TF

FOR SALE
Waldron Knife Coater
Knife 40" wide — Apron 35"
#1317
Address Box 55-1 care Paper Trade Journal. J-2

For Sale

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New Improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester 11, N. Y. TF

FOR SALE

1—5 cylinder Paper Machine — cylinders 70" wide with 51 dryers 64" face — 2 calender stacks — duplex sheeter — winder — etc.

Complete and on original foundation.

Bargain for immediate delivery.

J. J. ROSS COMPANY
377 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720
J-23

FOR SALE

2—Size 24 Blaw-Knox Pulpwood Grapples—like new—excellent condition. Being offered at far below present cost.

1—Jones #31 Repulper complete with reduction gear and 60 H.P. motor.

2—Crane Scales, 22,000 pounds capacity, Fairbanks-Morse, excellent condition.

2—Blaw-Clawson wet lap machines, one 72" and one 96". Completely reworked and like new.

Address inquiries to:
Purchasing Department
The Champion Paper and Fibre Co.
P. O. Box 872
Pasadena, Texas M-12

MOTOR FOR SALE
25 H.P. Crocker-Wheeler Motor with electronic Vari-"X" Cutler-Hammer automatic control, 1600 R.P.M. to zero, slip ring, 440 volt, 60 cycle, 3 phase. Opportunity to save money. Motor equipment hardly used.
Thomas W. Hall Company
Stamford, Conn. TF

For Sale

READY DRESSED
MILL COGS
LABOR SAVING TIME SAVING

The most economical filling that can be put in a mortise wheel

QUICK SERVICE
ON ALL SIZES
Write for Instruction Sheet "C" which is free

THE N. P. BOWSHER CO.
SOUTH BEND, IND.
J-2

FOR SALE

1—50C Spiral Paper Core Machine—Hudson Sharp
1—Paper Converting 3-web Dispenser Machine
1—Cranston 76" Undercut Knife
1—Hamblet 49" Roll Sheeter equipped with Reeves Drive
1—Mamco Lay-Boy
1—Mamco Counter & Marker for Hamblet Roll Sheeter
1—Two-way Rapids-Standard PPB-26-20-2—floor to floor—Floorveyor, with scissors lift and controls—(disassembled).
1—Scalping Machine — Sheridan 18"x32" Platen die press
1—Paper Shredder—4"x20", with Feed Roll Twister and Folder

ALL MACHINES EQUIPPED WITH MOTORS. CAN BE SEEN IN OPERATION.

Address Box 55-376 care Paper Trade Journal.
T.F.

FOR SALE—40" Langston, 50" Inman and 58" Chambon Shear-cut Slitters & Rewinders; 36" Knowlton and 55" Beck Sheeters; No. 6 Brightwood Box Mach. Set-up and Folding Box Machines. Address Box 55-428 care Paper Trade Journal. TF

WANTED TO BUY

IF YOU HAVE COMPLETE PLANTS OR SINGLE UNITS FOR SALE.....

CONTACT US AND WE WILL ARRANGE FOR IMMEDIATE INSPECTION AND ESTABLISH PRICE FOR OUTRIGHT PURCHASE.

J. J. ROSS COMPANY

377 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720
J-2

FOR SALE

BARKING DRUM
1—10′ x 30′.

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs, with motors.
Write us regarding your requirements.

BREAKER STACK
1—110″ face 2 roll breaker stack, with frames.

CALENDER STACKS
1—3 roll 30″ face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 Roll 86″. (Heavy Duty)
1—5 Roll 90″.
1—9 Roll—86″ face, Super Calender Stack.

CHIPPERS
1—96″ Murray 6 knife chipper, complete with 300 H.P. synchronous motor.
1—88″ Carthage 4 knife Chipper.
1—96″ Murray 4 knife Chipper—anti-friction bearings.
1—84″ Carthage 4 knife Chipper.

CLASSIFINER
1—Dilts Classifiner, practically new, with motor.

CORE MACHINE
1—M. D. Knowlton tube winder, 94″ face.

CREEPER AND WAXER
1—80″ Creeper and Waxer, excellent condition, details on request.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.

CYLINDER MOLDS
2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
2—36″ diameter x 54″ face.
1—36″ diameter x 84″ face.
2—36″ diameter x 86″ face, with vats.
2—36″ diameter x 110″ face.
3—36″ diameterx x90″ face, with 18″ diameter couch rolls.

DIGESTERS
2—14′ Globe Rotary Digesters.

DRIVES
1—Jones 21 H. P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
1—Vaughn 100 h.p. enclosed angle drive. Ratio 7 to 1.
2—Cleveland agitator drives, for chests.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 h.p.).

DRYERS
1—Complete unit, consisting of 6 dryers, 36″ diameter x 38″ face, including frames, gears, anti-friction bearings.
5—24″ diameter x 54″ face, with bearings.
1—28″ diameter x 48″ face.
5—28″ diameter x 80″ face with anti-friction bearings.
9—36″ diameter x 44″ face with frames, gears & bearings.
1—36″ diameter x 66″ face.
1—36″ diameter x 67″ face.
15—36″ diameter x 72″ face.
6—36″ diameter x 78″ face.
2—Dryers 36″ diameter x 84″ face, with bearings gears & frames.
1—36″ diameter x 90″ face.
3—36″ diameter x 115″ face, gears and bearings.
1—48″ diameter x 100″ face.
1—48″ diameter x 106″ face.
2—Dryers 48″ diameter x 134″ face.
1—48″ diameter x 144″ face.
1—62″ diameter x 67¾″ face, bearings & gears.
3—60″ diameter x 86″ face.
4—48″ diameter x 50″ face, bearings.

DYNOFINER
"Rice Barton," details on request.

EMBOSSING CALENDERS
1—45″ Meadows 2 roll embosser.
1—32″ Cavagnaro 2 roll embosser.
Write us regarding your requirements.

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face. with rubber couch roll.
1—Rice Barton & Fales Extractor Roll, 26″ diameter x 104″ face, with rubber couch roll.

FELT CONDITIONER
1—160″ Vickery, brand new, complete.

FLAT SCREENS
2—14 plate Packer, roller shoes.

GEARS
Write us regarding your requirements.

GRINDERS
2—4 pocket Grinders.
2—3 pocket Grinders.

JORDANS
1—#4 Emerson Jordan, anti-friction bearing.

LABORATORY EQUIPMENT
1—Marcy Rod Mill.
Write us regarding your requirements.

LAMINATING MACHINE
1—72″ Hudson-Sharp laminating machine. reverse coater.

MOTORS
1—50 H.P. Upright motors, air cooled 3/60/440, 1150 R.P.M. (Ball Bearing).
Write us regarding your requirements.

PRESSES
Write us regarding your requirements.

PRESS ROLLS
1—Chilled iron, chrome plated, 12″ x 100″
1—Chilled iron, chrome plated, 10″ x 74″

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—Jones Pulper.
1—Jones Pulp-Master.

PUMPS
1—Shartle Bros. Agiflow circulating pump, 2000 g.p.m., 62 ft. head.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTERS
1—#20 "Giant" Rag cutter, new, never used.
Write us regarding your requirements.

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—125″—3 bowl revolving reel.
1—134″—2 drum.
1—72″ Dowingtown Reel, 2 bowl.

REFINER
1—12″ Wiener Refiner.

ROLLS
1—Rubber Couch Roll—20″ diameter x 108″ face.
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#1A Bird, copper vat.
3—#2A Bird, copper vats.
Write us regarding your requirements.

SAVEALLS
2—Sandy Hill, 36″ diameter x 86″ face cylinder molds, anti-friction bearings and couch rolls.

SCREEN PLATES
Bird Rotary screen plates.
Plates (new) for flat screens.
Write us regarding your requirements.

SCREENS
2—Bird Machine Company Jonsson Screens.

SHAKE
1—Bevis Fourdrinier Shake.

SHEETERS
1—42″ Finlay Sheeter.
1—60″ Hamblet.
1—72″ Hamblet Sheeter.
1—85″ Maxson Sheeter (duplex) layboy, 11 rollback stand.
1—140″ Hamblet (Simplex)
1—81″ Hamblet, simplex, layboy and 10 rollback stand.
1—140″ Hamblet (Duplex).
1—100″ Hamblet Sheeter (Duplex) with layboy, backstand, etc.

SHOWERS
5—Bird showers 96″ face.

SLITTERS & WINDERS
1—42″ Cameron type 24-3A.
1—42″ Cameron—Type 9.
1—52″ Cameron—Type 6.
2—52″ Cameron—Type 10.
1—62″ Cameron (duplex)
1—72″ Cameron—Type 10.
1—40″ Fales Slitter.
1—72″ Cameron type 10-14K, Shear Cut, 50″ diameter rewind.
2—86″ Two Drum Moore & White, 50″ diameter rewind.
1—120″ Moore & White, 4 drum winder.
1—157″ Cameron—Type 18.
1—169″ Bagley & Sewall, 2 drum, shear cut, 60″ diameter rewind.
2—60″ Kidder.

SLITTING DEVICE
84″—Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new)

STOCK PUMPS
1—8 x 18 Shartle Triplex.
2—10 x 10 Beloit Duplex, low type
2—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.
1—20″ x 20″ centrifugal Shartle, 12,000 G.P.M. (new)
Advise us to your requirements.

SUCTION BOXES
Write us concerning your requirements.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only. 127¼″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face, SKF bearings.
1—Downingtown suction couch roll, complete (new) 127½″ face x 26″ diameter.
1—Sandusky Suction Couch Roll 18″ diameter x 98″ face.

SUCTION FELT ROLL
1—Gilbert & Nash 122″ face.

SUCTION PRESS ROLLS
1—Sandusky Suction Press Roll 130″ drilled face x 14⅞″ diameter.
1—Sandusky Suction Press Roll 162″ drilled face x 22″ diameter with roller bearings
1—Sandusky Suction Press Roll, 83″ face x 22″ diameter. Rebuilt like new
1—Downingtown Rubber Covered Suction Press Roll, complete (new) 125½″ face x 24″ diameter.

SUCTION PRESS SHELL
1—Beloit rubber covered suction press shell 19¼″ diameter x 100″ drilled face.
1—Downingtown rubber covered suction press shell only, 125¼″ face x 24″ diameter.

SUPERCALENDER STACKS
1—60″ 10 roll Holyoke.

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face. Write us regarding your requirements.

THICKENERS
1—All cast iron vat, 115″ face cylinder mold, anti friction bearings, 18″ couch roll—very good condition.
1—42″ diameter x 146″ face cylinder mold with 18″ diameter couch roll.
Write us regarding your requirements.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder)

TRIMMERS
1—63″ Oswego cutter.
1—60″ Guillotine cutter.
1—44″ Seybold.
1—64″ Seybold cutter.

VACUUM PUMPS
2—L-6 Nash vacuum pumps
2—L-5 Nash vacuum pumps
1—L-4 Nash vacuum pump
1—L-3 Nash vacuum pump
2—#1 Nash Hytor vacuum pumps
2—#2 Nash Hytor vacuum pumps
1—#3 Nash Hytor vacuum pump
2—#4 Nash Hytor vacuum pump

VALVES
8—10″ 3 way DeZurik Dump Valves.
6—12″ 3 way DeZurik Dump Valves.

VATS
2—D. J. Murray Company Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

VIBRATING SCREEN
1—Tyler Niagara Vibrating Screen, practically new.

WET MACHINE
1—72″ Wet Machine.

YANKEE DRYERS
1—84″ diameter x 56″ face.
2—108″ diameter x 72″ face.

Paddy Ross, Pres.
377 Frelinghuysen Ave.*

J. J. ROSS COMPANY

Tel.—Bigelow 3-3720

Ben Kurs, Treas.
Newark 5, N. J.

Wanted

WANTED

One No. 4, Sharties Hydrafiner.
Give detail specifications.
Prefer 900 R.P.M.
Write—Alpha Cellulose Corporation
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Bloomington, Illinois

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PROPOSALS

FOR FURNISHING

PAPER AND ENVELOPES FOR THE U. S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 a. m. E. S. T., January 9, 1956, in the room of the Joint Committee on Printing, in the Capitol, Washington, D. C., for furnishing the paper for the public printing and binding, and blank paper and plain envelopes for the use of the Government departments and establishments in the District of Columbia, for the terms of 3 months for paper and 6 months for envelopes beginning February 1, 1956, deliveries to be f. o. b. Government Printing Office Warehouse, or warehouse siding, Washington, D. C. The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposals. The committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part, if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedule, and specifications may be obtained by addressing Raymond Blattenberger, Public Printer, Washington, D. C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 15 of the proposal for paper and paragraph 13 of the proposal for envelopes.

The approximate estimated quantities set forth in detail in the schedules comprise:

PAPER

1,595,000 pounds newsprint paper; 2,505,000 pounds machine-finish book paper; 40,000 pounds machine-finish book end paper; 85,000 pounds english-finish book paper; 8,231,200 pounds offset book paper; 340,000 pounds antique book paper; 520,000 pounds supercalendered book paper; 1,452,000 pounds coated book paper; 997,500 pounds mimeograph paper; 570,000 pounds duplicator copy paper; 8,765,500 pounds writing paper; 847,325 pounds map paper; 506,000 pounds manifold paper; 2,013,500 pounds bond paper; 924,000 pounds ledger paper; 1,420,000 pounds index paper; 300,000 pounds cover paper; 10,000 sheets clothlined cover paper; 307,000 pounds manila paper; 240,000 pounds kraft paper; 430,000 sheets gummed paper; 47,000 pounds blotting paper; 5,000 pounds wallet board; 45,000 pounds tag board; 20,000 pounds manila cardboard; 60,000 sheets railroad board; 400,000 pounds wood cardboard; 150,000 pounds tan board; 4,860,000 pounds postal card paper; 55,000 sheets pressboard; 280,000 pounds newsboard;

280,000 {pounds binder's board. / pounds chestnut cover board.

ENVELOPES

36,430,000 kraft; 12,330,000 writing, chemical wood, white and colored; 85,000 100% writing, white; 515,000 25% bond, white; 360,000 100% bond, white.

By direction of the Joint Committee on Printing.

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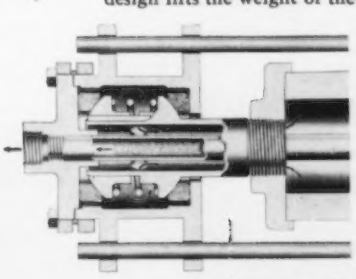

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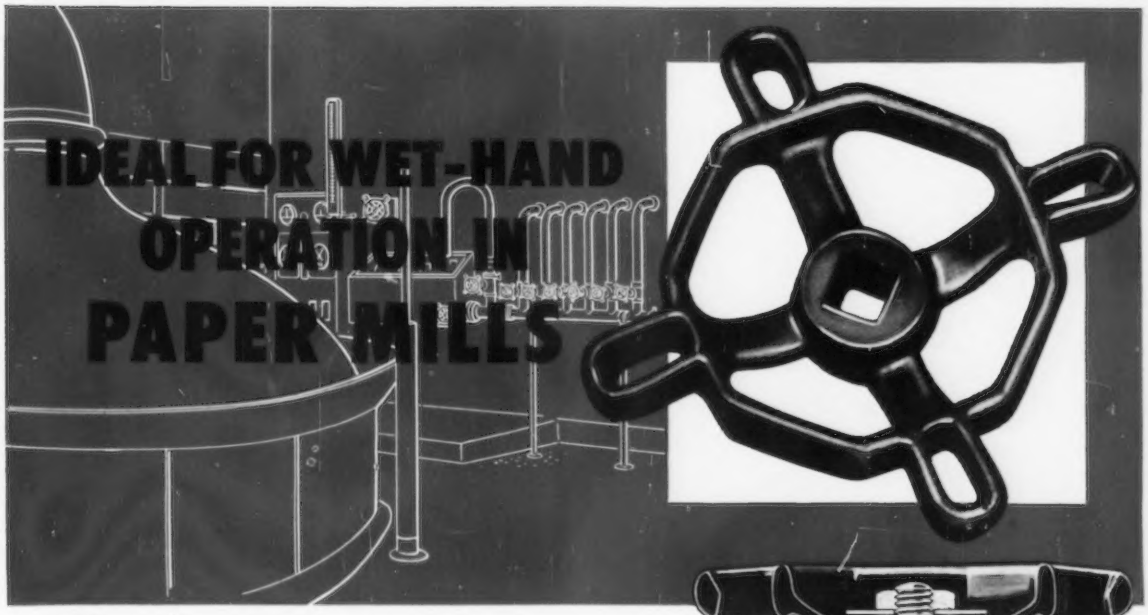

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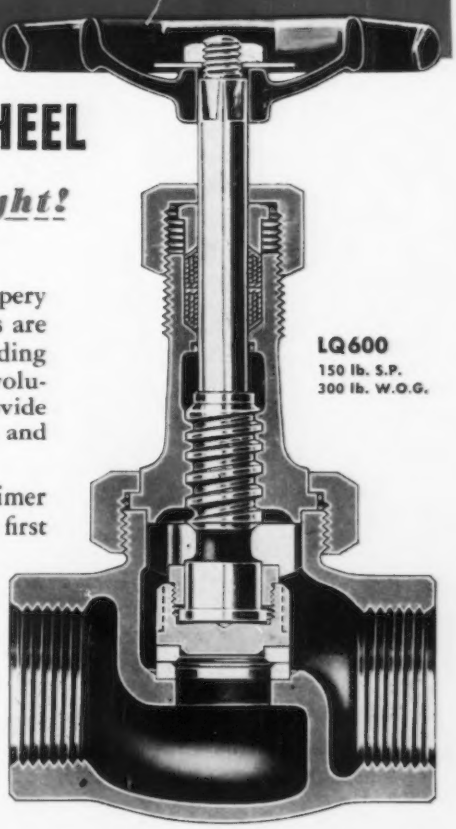

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How high load capacity is built into less space in Dodge-TIMKEN All-Steel pillow block

THIS rugged Dodge-Timken pillow block packs more capacity in less space than ever before. All-steel construction gives it extra strength and durability. The design is compact. No special thrust devices that take up extra space are needed—the two-row Timken® tapered roller bearing takes *both* radial and thrust loads in any combination. And full line contact between the rollers and races assures high load capacity.

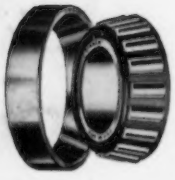
The cutaway view below shows the bearing. It is of special design, with tapered bore and self-aligning spherical outer surface—never requires adjustment. As in all Timken bearings, races and rollers are case-carburized and have tough, shock-resistant cores under hard, wear-resistant surfaces. Under normal conditions, the Timken bearing will last the life of the machinery with which the pillow block is used.

In addition to the all-steel pillow block shown here, Timken bearings are also used in the Type "E", Double-Interlock, Type "C", and Special-Duty pillow blocks—other versatile pillow blocks in the Dodge-Timken line with a wide variety of uses in industry.

To be sure of the finest bearing steel, we make our own—America's only bearing manufacturer that does. No other bearings can give you all the advantages you get with Timken bearings. Include them in your design plans... specify them for the machines you buy or build. Look for the trademark "Timken"—it's on the bearing that makes any machine run better. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

TIMKEN BEARING EQUIPPED

This symbol on a product means its bearings are the best.



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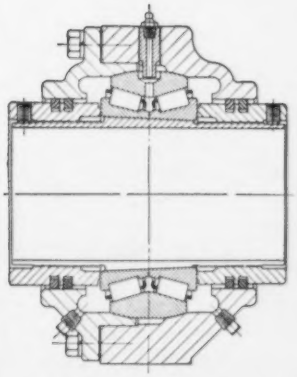
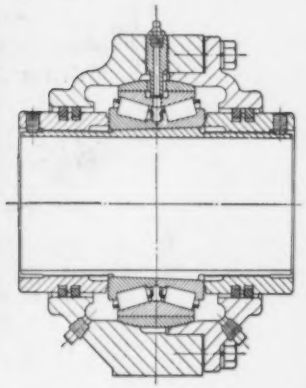


How **DODGE MANUFACTURING CORPORATION,** Mishawaka, Ind., mounts Timken bearings in the Dodge-Timken All-Steel pillow block. Above: non-expansion block with fixed bearing. Below: expansion block with floating bearing.



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